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10

october 1954

General Hospital Neurological Building, Philadelphia, Penna. Archt.—Harbeson, Hough, Livingston & Larson; Contr.—McCloskey & Co., Inc.—both of Philadelphia. Pozzolith Ready-Mixed Concrete supplied by The Warner Co., Philadelphia.

St. Joseph's Hospital Addition, Burbank, Calif. Archt.—John W. Maloney, Seattle, Wash.; Contr.—Pozzo Construction Co., Los Angeles. Pozzolith Ready-Mixed Concrete supplied by Jewel City Ready-Mix Co., Beverly Hills.

hospitals

Permanente Foundation Hospital, Los Angeles, Calif. Archt.—Wolff and Phillips, Portland, Oregon; Contr.—C. L. Peck, Los Angeles. Pozzolith Ready-Mixed Concrete supplied by Graham Brothers Co., Los Angeles.

Veteran's Hospital, New Orleans, La. Archts.—Favrot, Reed, Mathes & Bergman, New Orleans; Faulkner, Kingsbury & Stenhouse, Washington, D.C.; Contr.—Robert E. McKee, Dallas, Tex. Pozzolith Concrete batched at job site.

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* See Bureau of Reclamation's current Concrete Manual, Page 130.

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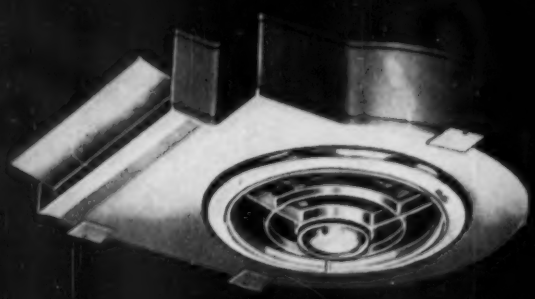

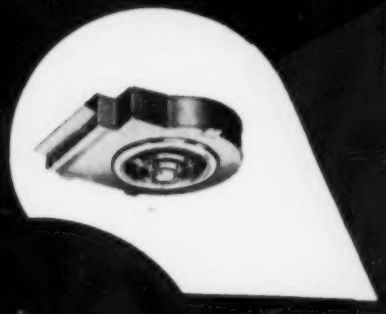

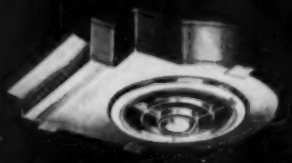

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pa newsletter

October 1954

Lectureships and research awards for academic year 1955-56, to be granted by the Government under Fulbright Act, are now open for application. Information and forms are obtainable from Conference Board of Associated Research Councils, Committee on International Exchange of Persons, 2101 Constitution Ave., Washington, D. C.

American Academy in Rome is also offering limited number of Fellowships in Architecture, to begin October 1, 1955. Applications and submissions of work, in form prescribed, must be received at Academy's New York office before January 1. For details, address Academy's Executive Secretary at 101 Park Avenue, New York 17, N. Y.

Neil A. Connor, partner in Boston firm of Bourne, Connor, Nichols & Whiting, has been appointed Director of Architectural Standards, Federal Housing Administration. Commissioner Norman P. Mason announced that Connor will assist in revision of FHA minimum property requirements with following objectives: encouragement of improvements in design of dwellings on which there are FHA-insured mortgages, and recognition to quality construction and use of quality products in amounts of FHA-insured mortgages.

First Award and $20,000 were won in Carson Pirie Scott & Co. Centennial Competition by a Pratt Institute team: four senior students and Bill Breger, their critic and Associate Professor. Presentations from 106 entrants were judged. Among cash winners were three other school groups, from North Carolina State, MIT, and Auburn Polytechnic Institute. Prizewinners and Mentions are listed on page 218.

Producers' Council $100,000 traveling "Caravan of Quality Building Products" began second half of nationwide tour last month. October show dates are: 1st—Birmingham, 6th—Atlanta, 12th—Miami, 15th—Jacksonville, 19th—Charlotte, 22nd—Washington, D. C., 26th-28th—New York. Caravan's last showing of the year will be November 3rd at Newark, N. J.

Omnibus Housing Revision Bill was signed in August by President Eisenhower, who called it one of his major legislative victories. Bill liberalizes Government mortgage insurance, allows smaller down payments and longer terms. It also provides for gradual switchover of Federal National Mortgage Association from Federal to private capital. Only setback to the President in bill was in public housing—compromise bill provided authority for 35,000 units in the next year, rather than 140,000 units over the next four years which had been asked.

For first seven months of this year, Labor and Commerce Departments estimated construction expenditures at record $20.1-billions. Biggest dollar gains over like 1953 period were in offices, stores, and other commercial building; private residential building; and private and public educational construction. Substantial decreases were reported in 1954 spending for military facilities, both private and public industrial building, public housing, farm construction, and conservation and development work.

Turn page for WASHINGTON PERSPECTIVE

PROGRESSIVE ARCHITECTURE published monthly by REINHOLD PUBLISHING CORPORATION, 430 Park Avenue, New York 22, N. Y. Ralph W. Reinhold, Chairman of the Board; Philip H. Hubbard, President and Treasurer; Fred P. Peters, Vice-President and Secretary; Gilbert E. Cochran, H. Burton Lowe, Merald F. Lue, William P. Winsor, Vice-Presidents; Kathleen Starke, Assistant Treasurer. Executive and Editorial offices: 430 Park Avenue, New York 22, N. Y. Subscriptions payable in advance. Subscription prices to those who, by title, are *architects, engineers, specification writers, designers or draftsmen, or employes of architectural and engineering firms*, and to government departments, trade associations, members of the armed forces, college libraries, college students, publishers, advertisers, prospective advertisers and their employes—$5.00 for one year, $8.00 for two years, $10.00 for three years. Above prices are applicable in U. S., U. S. Possessions and Canada. Latin America and Philippine Republic—$10.00 for one year, $16.00 for two years, $20.00 for three years. All other foreign subscriptions — $15.00 for one year, $25.00 for two years, $30.00 for three years. Single copy — $1.00; special issues — $2.00 per copy. Printed by Publishers Printing Co., New York, N. Y. Copyright 1954, Reinhold Publishing Corp. Trade Mark Reg. All rights reserved. Re-entered as Second Class Matter September 21, 1951, at the Post Office at New York, N. Y., under the Act of March 3, 1879. Volume XXXV, No. 10, October, 1954. In Art Index, Architectural Index.

ABP

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newsletter

Frederick Gutheim Washington Perspective

The dismal international outlook continues to affect all Washington thinking, like radioactivity striking distant photographic emulsions. In previous columns I have suggested that this is the fundamental background for all national decisions on building legislation, programs, and money—including the supply of mortgage credit. How much building, what kind, where and when—these are the direct or indirect consequences of Congressional and Administration action. National policy has created our present building "boom" which appears likely to continue indefinitely, until halted by some international factors. Only the need for materials, manpower, or a diversion of national construction effort into more boldly defined channels of defense or military effort, seems likely to stem the continuing high production of the homes, commercial buildings, schools, highways, utilities, and those other constructed essentials of our dynamic, expanding nation which are now causing construction figures to rise.

New faces have recently appeared in a large number of architecturally-important Washington offices. Retirements and resignations have eliminated many familiars, and reorganizations and new legislation have created new posts and many new assignments. At the Public Buildings Service, Peter Strobel, the new Commissioner, is rapidly establishing himself. PBS is minus the services of Alan S. Thorn, Supervising Architect, who retired last month, after serving for five years in the Government's key architectural spot. Thorn rounded out a career of 20 years in the Federal service. Much current PBS activity revolves around the Lease-Purchase building program, now under the supervision of Assistant Commissioner Harry Hunter. The first group of these projects has now been processed and indicates there will be little change in architectural character from the conventional public buildings and post offices. While it's still too early to tell, the experience of the Atomic Energy Commission, with its headquarters building plans, indicates that while PBS clings firmly to its idea of an all-purpose loft-type office building, especially for dispersed sites, the agency for which it is being designed can have a big say in what is done to meet its needs. Dispersal is a big factor in restoring the importance of agency requirements in the design of public buildings; concentration, on the other hand, allows more interchangeable office space among Federal departments.

Dispersal got its biggest boost with the delayed publication of an April 15 circular directive from the Office of Defense Mobilization. The Presidential order stated flatly that no new permanent construction for vital government offices should be erected within 10 miles of the perimeter of an established urban target area. The initial test of the directive, in a redevelopment project in southwest Washington, has shown it means business.

At the Office of Defense Mobilization, Tracy Augur, who has been mainly responsible for dispersal policies in the location of defense production and government facilities, has been shifted to the Housing and Home Finance Agency. It does not appear that Augur's former job will be filled. At HHFA he will be in charge of a new program of Federal aids to local planning authorized in Title VII of the new housing act. A major change at HHFA was the resignation of Carl Feiss, who had directed the design aspects of the urban redevelopment program, now swallowed up in the more comprehensive "urban renewal" activity initiated by the housing act.

One important change at FHA is the appointment of an excellent New England architect, Neil Connor, to head a new office of architectural standards. If Connor is allowed to do a job, his contribution could be most important from the standpoint of that most retarded area of FHA practice —design. Powerful forces can be counted to resist any effort to develop objective design criteria, especially any which narrow the discretionary powers of the FHA evaluators. The activity is also trapped in a paradox: any effort to tighten standards is apt to be a design straitjacket. A substantial research program is needed to find the way out of this dilemma, and that is the very door Congress slammed last spring.

State Department's Foreign Buildings Office has received the resignation of Edward J. Kerrigan, who succeeded Leland King last year. The splendid architectural appointments made by FBO's advisory committee (see P.S. column in this issue) gave this activity a fresh impetus, which this change at the top is not likely to endanger.

At the other end of Pennsylvania Avenue there is a new Architect of the Capitol. This curiously named office has little to do with architecture, and is concerned mainly with management of buildings that house Congressional activity —down to and including the number of beans in the Senate restaurant's navy bean soup. The new Architect of the Capitol is a former Congressman, builder, landscape contractor, and engineer, J. George Stewart, who takes over from the indestructible David Lynn.

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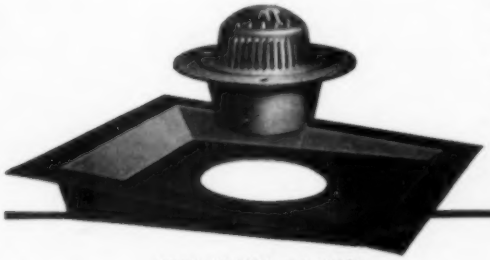

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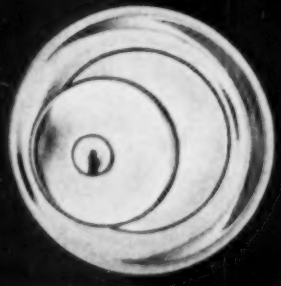

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PROGRESSIVE ARCHITECTURE

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October 1954

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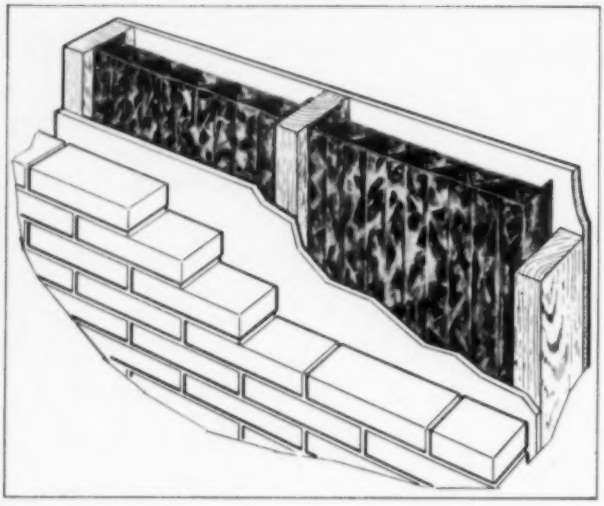

The surfaces of ordinary IRON have about 4 times the reflectivity against heat rays that the surfaces of asbestos, asphalt paper, brick, rockwool, plaster, wood and other ordinary building materials have. Brass, gold, silver and ALUMINUM surfaces have about TEN TIMES the reflectivity against heat rays that these non-metallic materials have. Aluminum surfaces, for example, have a 97% reflectivity for RADIATION whereas the surfaces of most building materials, including ordinary insulations, have a reflectivity of only 10%.

RADIATION (heat rays) is responsible for 65% to 80% of all heat flow sideways in building spaces; 55% to 75% upwards; and 93% downwards.

Air space has low density, therefore heat flow by CONDUCTION through the **spaces** inside building walls, roofs, attics or floors is slight. CONVECTION can account for 15% to 30% of the heat flow sideways in such spaces, and up to 45% upwards. There is NO convection downwards.

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To obtain MAXIMUM, **uniform-depth** protection against heat loss and condensation formation, it is necessary to use the new **edge-to-edge** multiple aluminum*, **each** sheet of which stretches from joist to joist, and also all through the flanges for further vapor protection as well as permanent attachment of each sheet.

*Patent applied for.

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A very interesting and useful "Radiation Table" listing the Emissivity, Absorptivity, and Reflectivity of a long list of materials has been prepared by Alexander Schwartz, president of Infra Insulation, Inc. It is yours for the asking.

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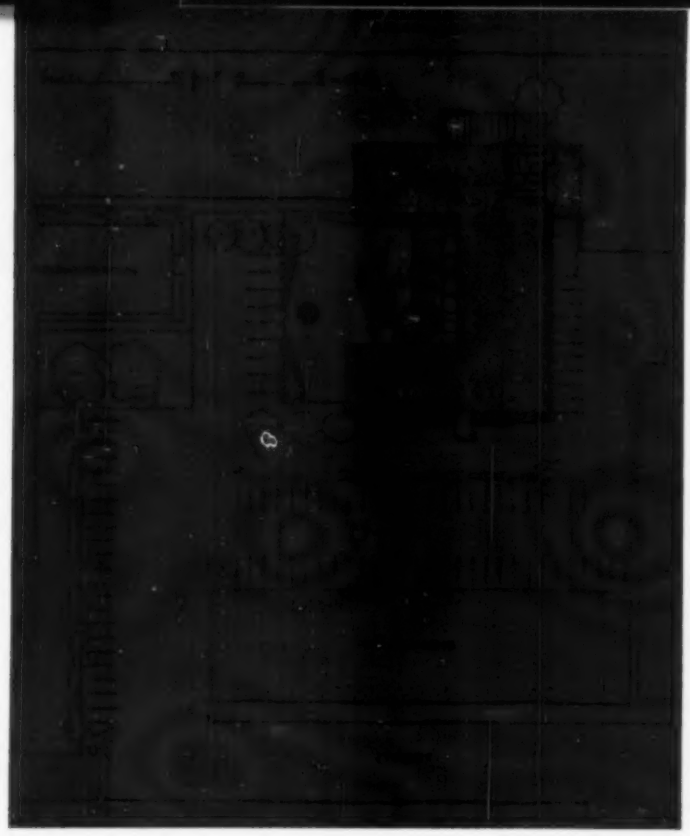
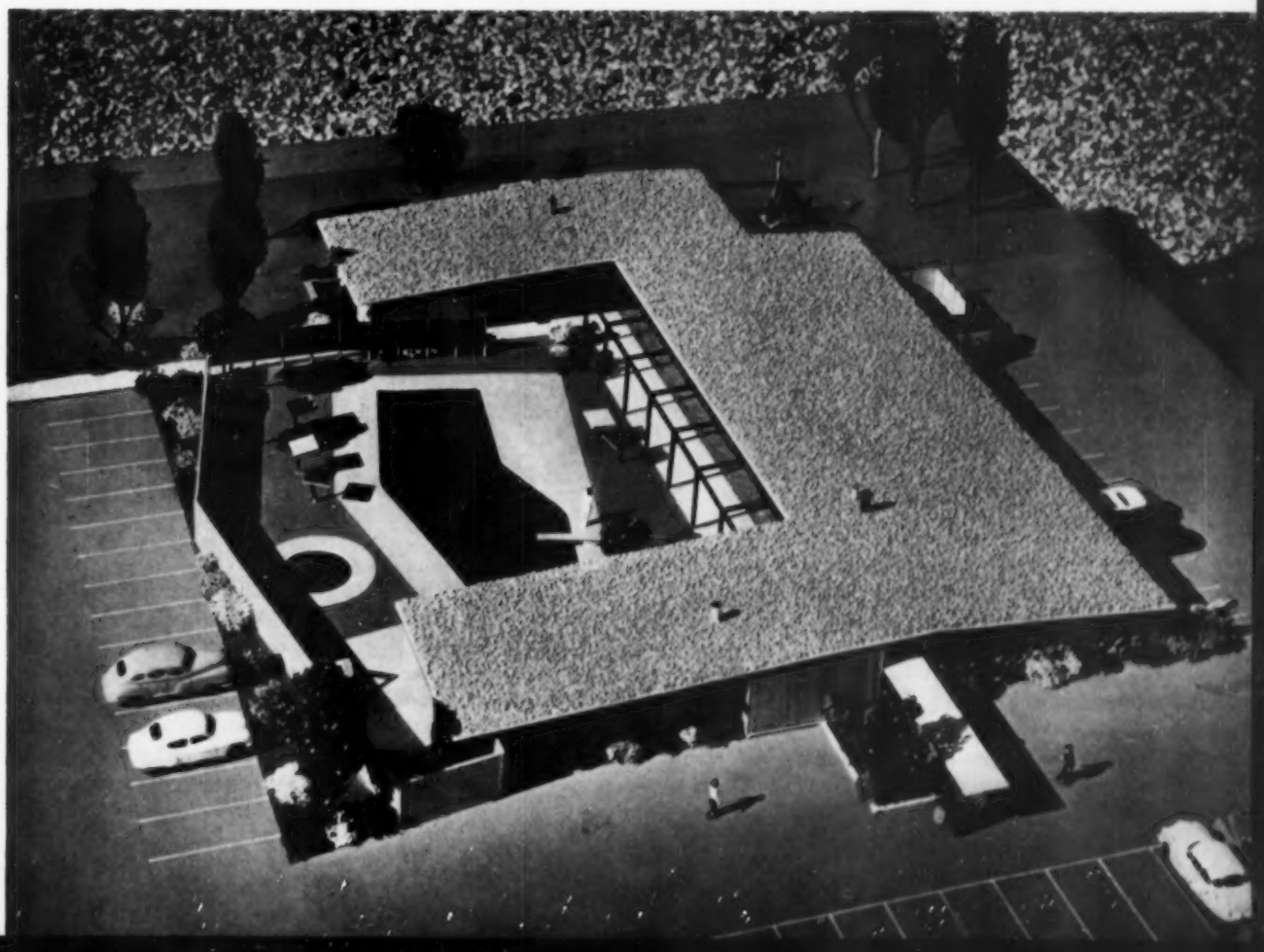
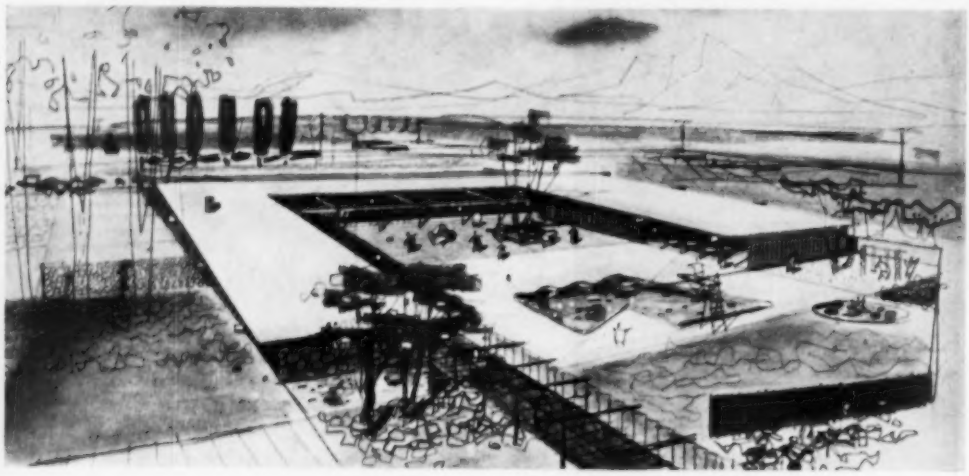


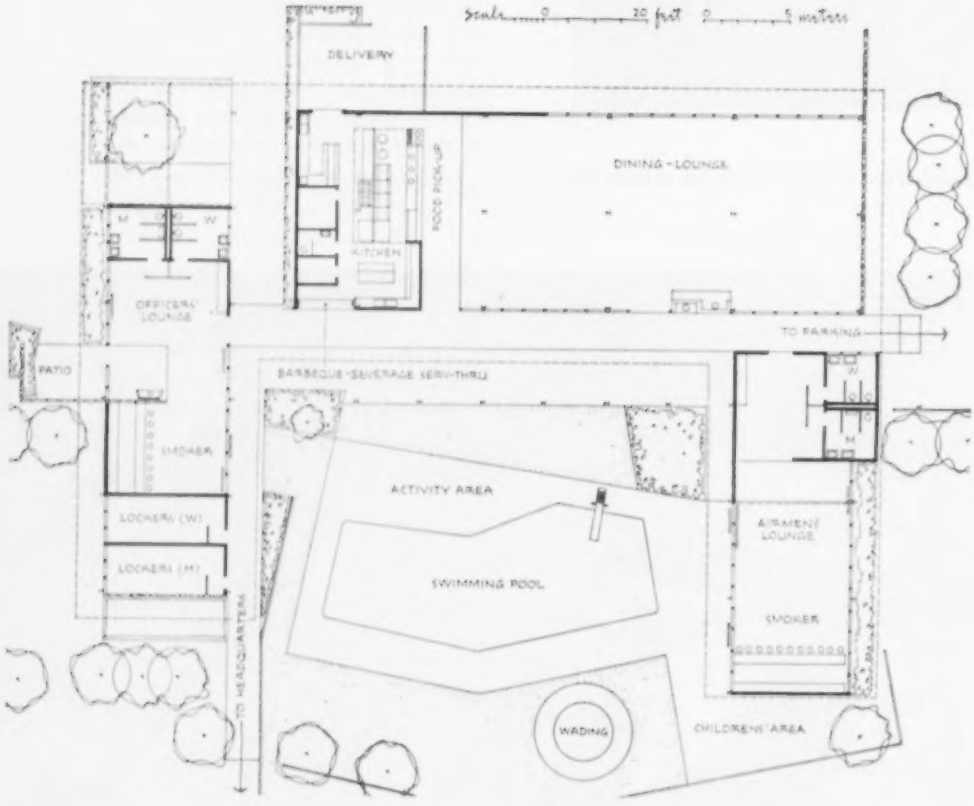
recreation building for officers and airmen

A definite need will be met by the new recreational building at the California Air National Guard Base at Van Nuys, California. The rigorous training program for both flying and ground personnel requires the "Weekend Warriors" (as they call themselves) to spend practically every Saturday and Sunday at the Air Guard Base, which is charged with the defense of the California coastline in the event of enemy air attack.

Model photo: Douglas M. Simmonds







The mess and recreational facilities afforded by this new building will be open to airmen, their families, and all others participating in Air Guard activities. Funds obtained through public subscription and industrial contributions will cover the costs. Architect for the structure is Welton Becket, who has contributed his services in support of the project.

The new structure will replace a worn wooden one on the west side of the airport. Built in a U form around an open-air recreation area and swimming pool, the building will include a central mess hall, kitchen, a large indoor-outdoor barbecue, and lounges for officers and airmen. For the families a snack bar, guest dressing rooms, and showers will be provided.

Designed for a steel frame, the walls will be concrete block with brick and tile panels. Provision for air conditioning has been made.

Attractive landscaping and indoor planting, combined with colorful materials, will provide a cheerful and relaxing atmosphere for servicemen and their families during off-duty hours.

Rendering: Welton Becket & Associates

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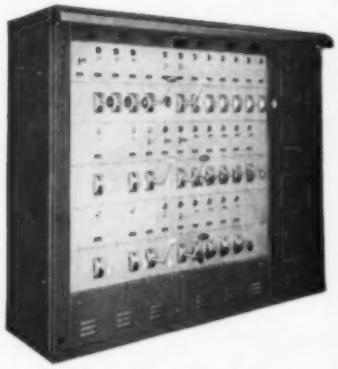

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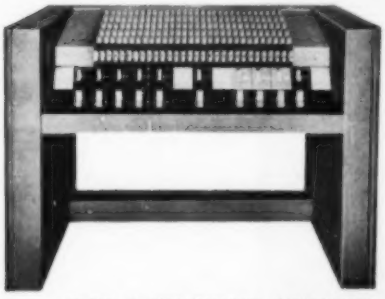

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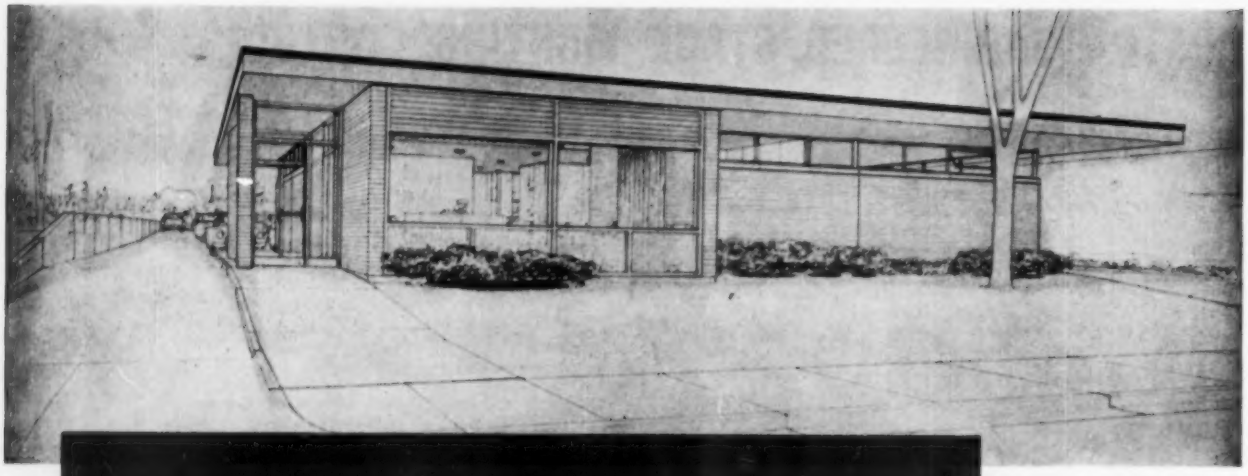
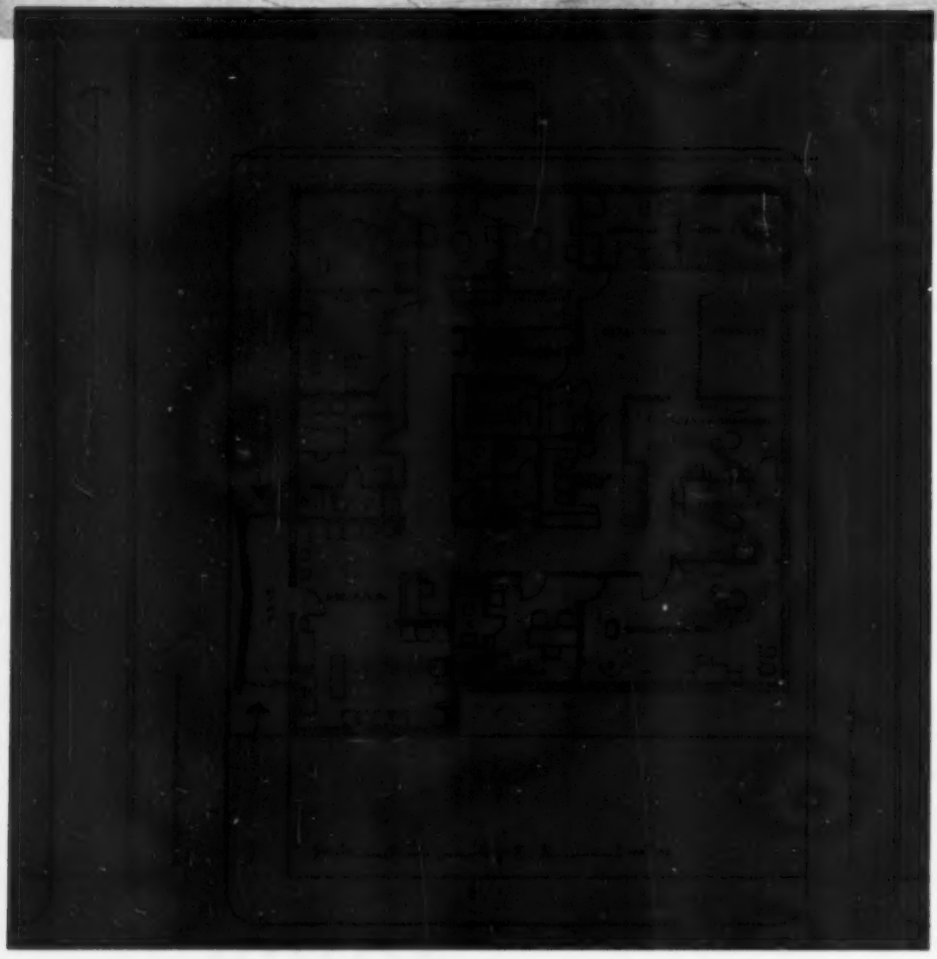


offices and clinic



Two eye specialists own and share the operation of this building, which will house their separate clinics. Now under construction in one of Oklahoma City's residential neighborhoods, it was designed by Joseph N. Boaz, of Winkler, Reid & Boaz (the firm is now dissolved).

The structural frame is steel, entirely independent of walls and partitions. Exterior wall material is face brick. Interior partitions are all plywood—walnut, birch, and fir—on redwood studs.

Air-conditioning controls automatically cut off compressors, leaving only blowers in operation when outside air reaches the proper temperature. A return air tunnel surrounds the entire building. *Rendering: Joseph N. Boaz*

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Even 100-mile-an-hour rain cannot penetrate this modern school's walls, coated entirely with water repellent made with *Linde* silicones.

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Board of Education maintenance engineers say that rain leaks and seepage that once caused costly damage to interior plaster, paint, and woodwork, have been eliminated.

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Leaks were serious in this older school, so brick was repointed, then coated with silicone repellent. Result: No more problems from moisture.

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- **Fast-Working** — Dry in 3 hours to complete water repellency.
- **Applicable the Year Round** — Can be applied even at 15 degrees Fahrenheit.
- **Long Lasting** — Tests indicate dependable service for 10 years!
- **Easy to Apply** — Either low-pressure spray or brush.
- **Can Be Painted Over** — With oil-base paints.

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P/A readers like to see how other architects detail

Dear Editor: Personally, I find your new ARCHITECT'S DETAILS of considerable value. We use them here for comparisons in methods—and frequently for design ideas. I hope the section is continued.

WILLIAM I. PARR
Lewiston, Idaho

•

Dear Editor: I believe the idea is fine and, if the details are properly selected, it would be of great use to most of us.

ROBERT J. BENNETT
Morgantown, W. Va.

•

Dear Editor: We appreciate seeing details done by other Architects.

W. B. MC CALL
Tressler & McCall
Cody, Wyo.

•

Dear Editor: We think the presentation of ARCHITECT'S DETAILS as a feature in your magazine is very interesting and helpful to the profession.

J. FRANKLIN CLARK, JR.
Kingstree, S. C.

•

Dear Editor: I feel it is of considerable interest to see samples of the drafting room methods of other offices. I favor a continuation of ARCHITECT'S DETAILS in future issues.

As long as this note is in the machine, I would like to express my thanks for your magazine. Have gone along with the name changes and improvements in P/A since 1940 and can't say there has been a single issue which I haven't enjoyed reading.

There are times when a new issue of P/A must be just thumbed-through when it arrives—and really absorbed at a later date. But even when just thumbing through your P.S. column is always read —there is food for thought as well as a laugh.

Again, I would like to see more ARCHITECT'S DETAILS. ROBERT C. DOUGLAS
Beaverton, Ore.

Dear Editor: I like your series, ARCHITECT'S DETAILS, direct from the original sheets. This one (September) is a trifle on the engineering side.

SEYMOUR SALTUS
Morristown, N. J.

•

Dear Editor: This takes us back to the early *Pencil Points*, which when considered, is what we like. Questions on "how was it presented, worked out, detailed," etc.; for the hard-pressed architect this series should be quite valuable.

I would suggest you manage somehow to provide expendable "ads" on the backs of these details for ease of filing.

LEONARD SCHEER
New York, N. Y.

•

Dear Editor: We are all for details, but they must be selected for the best in architecture. G. J. HANNIKEN
Detroit, Mich.

•

Dear Editor: This is good—I would like to see it continued.

RAYMOND S. ZIEGLER
Altadena, Calif.

•

Dear Editor: I feel that a magazine, just as an Architect, must continually look for new and better methods of doing a job. I believe that your feature, ARCHITECT'S DETAILS, will aid us all in this search. JAMES S. LIBERTY
Albuquerque, N. Mex.

•

Dear Editor: I certainly do appreciate the feature, and the ones that have appeared in the past few issues of P/A have been interesting. I must say, rather critically, however, that I feel the (September) one on the Hackensack river crossing, by Fellheimer & Wagner, is of such limited application, and deals with a circumstance that few architects will ever have occasion to meet, that I, for one, would feel that it falls far below the previous selections.

The feature is good, the past selections have been excellent.

GORDON DICKSON ORR, JR.
Wallingford, Conn.

•

Dear Editor: As a long-time subscriber to P/A and its forebears, I have always been interested in your SELECTED DETAILS, primarily because Caleb Hornbostel was several years my senior at school, where his father took a great interest in the work. Accordingly, when I first conceived the current brochure series for the Architectural Woodwork Institute, and was drawing my preliminary plans, so to speak, I interviewed Richard Bennett here in Chicago, because, as you know, Dick is one of Caleb's former partners, and often serves on the juries of Producers Council for product literature. We talked at considerable length about the SELECTED DETAILS, and about details in general. He made some very good suggestions to me, some of which I have tried to incorporate into the brochures that are now being published by AWI.

We have been pleasantly surprised by the reaction to the AWI details from architects, and I think it is significant that many of our readers are stimulated by the reading matter which appears in conjunction with the details, rather than by the pictures themselves. Of course, we are a long way from having attained the ideal we are seeking, and I need hardly tell you that it is sometimes difficult to obtain from architects the information that will help to illuminate their own drawings. For what it is worth, here is the critique as rendered by Bennett, and as adapted by the AWI, after six months of practice:

"The detail in its printed format can mean more to the architect if it is accompanied by an underlying philosophy, or *raison d'etre*. For example, information should be conveyed as to why the particular detail was used in a particular situation. Why were certain materials

(Continued on page 16)

(Continued from page 15)

chosen, and other materials not selected? What is the basic principle used in this detail that could be applied to similar details in other situations? *(For example, is there any aspect of the detail of the railing by Fellheimer & Wagner that could be applied to a railing on the balcony of a high apartment building?)* Specific data is likewise very helpful in enhancing a detail, which is more often than not an incomplete document without accurate specifications." *(An example thereof is the flashing which appears on the wall sections, published on pages 122 and 123 of your July issue. A little story in print describing the flashing, or an actual specification would go a long way to make these details more valuable to an architect too busy to read the fine nomenclature.)*

There is another principle which Dick Bennett emphasized. He stressed the fact that the hypothetical details should carry some objective comment by the architect or designer which would answer the following questions:

"How did this installation endure after several years? Did the materials succumb to the weather; and did the joints leak? If this detail were to be done over again today, could it be improved upon or would it be drawn in a different manner? What are the good features of this detail which have endeared it to the architect?"

I realize that some of the above comments may pertain to your SELECTED DETAILS as well as your ARCHITECT'S DETAILS. With reference to the new feature, I am sure that you will recall that some of the architectural magazines back in the '20s and early '30s used to publish details of this type; and I suppose that the magazines eventually discontinued these features because of lack of interest on the part of readers. The architect who is concerned with working drawings in his own office every day can easily be forgiven for developing a blind spot with regard to more working drawings, when he sees them in a magazine. Perhaps in this lone respect, the pen is mightier than the T-square; and the printed word might be used in conjunction with any worthwhile endeavor to find a new approach to the problem of graphically presenting useful methods and ideas.

Yours for higher standards of architectural journalism.

JAMES ARKIN, Architectural Consultant
Architectural Woodwork Institute
Chicago, Ill.

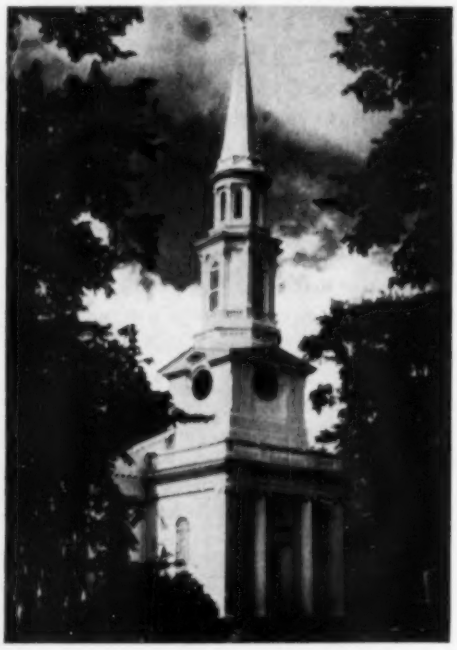
•

Dear Editor: One of the reasons I continue my subscription to P/A is because of the SELECTED DETAILS and the accompanying photos, which I consider a "must" to really comprehend them. They help to explain in seconds to draftsmen what it would take hours to do in freehand sketches.

If ARCHITECT'S DETAILS are to supplement the SELECTED DETAILS, that is fine, but if they are to replace them I say

(Continued on page 19)

Old North Congregational Church, Ipswich, Mass., erected in 1846, is rare example of wood Gothic. Old North dates back to about 1634.



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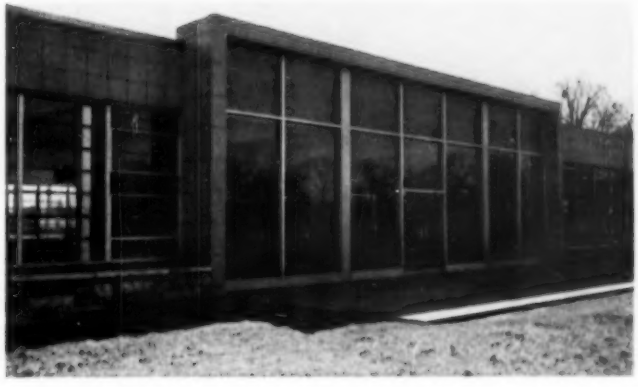
Frank Angelilli Construction Co., Inc. —*Builder*

Spandrels 3'7" wide and 163' long are composed of Architectural Terra Cotta units approximately 21" x 24". Color is a light mottled green.



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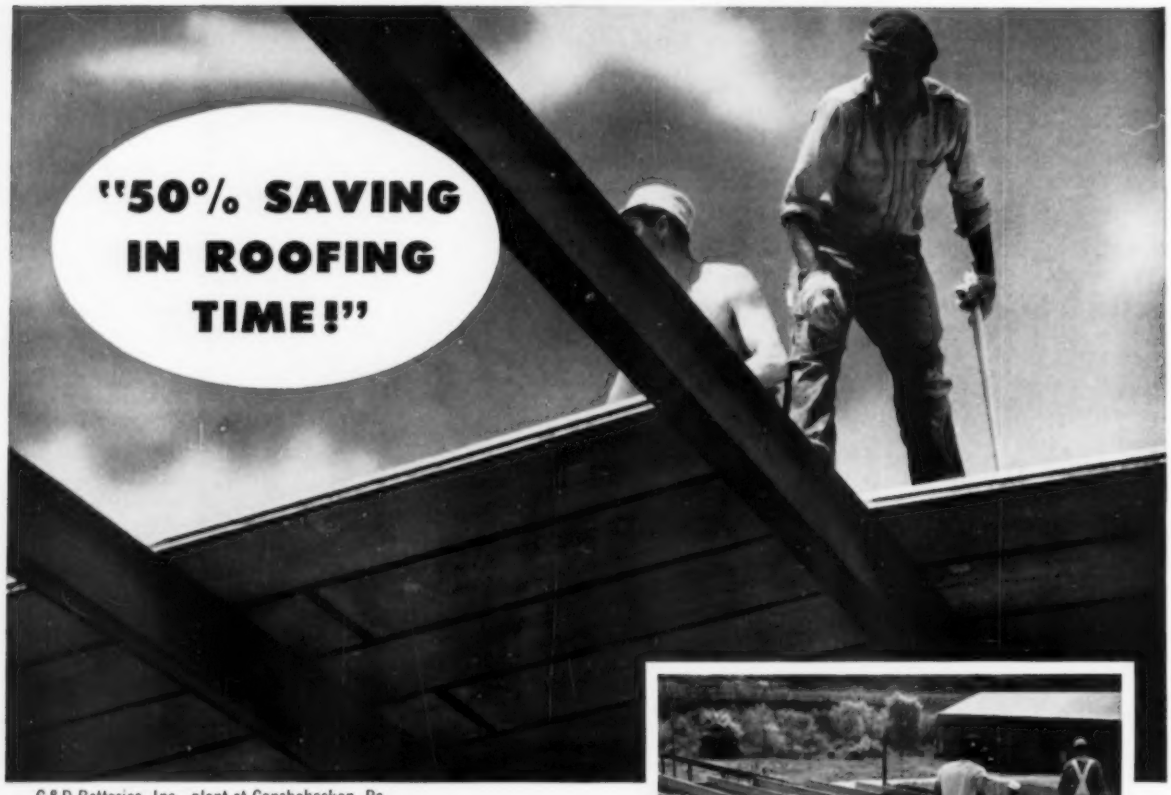

C & D Batteries, Inc., plant at Conshohocken, Pa.
Building Contractors: Lloyd F. Kershner, Inc., Norristown, Pa.

C & D Batteries, Inc., Specifies CERTAIN-TEED GYPSTEEL PLANK ROOF DECK for Fast, Fire-Resistant Construction

Last fall a serious fire destroyed the main building roof and walls on one side of the C & D Batteries, Inc., plant at Conshohocken, Pa. Some 60,000 square feet of floor space was left exposed to the elements. Production had to be temporarily shifted to two other plants in the area.

When rebuilding started, construction speed and simplicity—plus protection against fire—were considered of primary importance. Says Mr. Frank S. Carlile, Vice President and Treasurer of C & D Batteries:

"I suggested Gypsteel Plank because of the speed of installation . . . we have a very heavy production schedule to maintain. By using Gypsteel Plank we will save at least 50% of the construction time needed for this phase of building."

Adds Mr. Quillman Kershner, construction engineer in charge of the project:

"I've been working with Gypsteel Plank for about eight years. I like to use it because it is fire resistant and lends itself to easy installation. The tongue-and-groove steel frame is an excellent principle. It makes for a much tighter 'decking' job."

These are just a few of the advantages Gypsteel Plank offers architects, builders and building owners. Certain-teed Gypsteel Plank is a pre-cast gypsum roof deck reinforced with steel. It is light, strong, fire resistant and provides good thermal insulation. Planks (2" x 15" x 10') are tongued and grooved for quick, easy assembly.

Next time your plans call for roof decking, we'd like to show you how well Gypsteel Plank can meet *your* requirements. Write for complete information now.

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emphatically—*don't!* And don't print them back to back—it is difficult to file them when two entirely different subjects appear on reverse sides.

A. R. MARTIN
Wilmette, Ill.

definition doubted

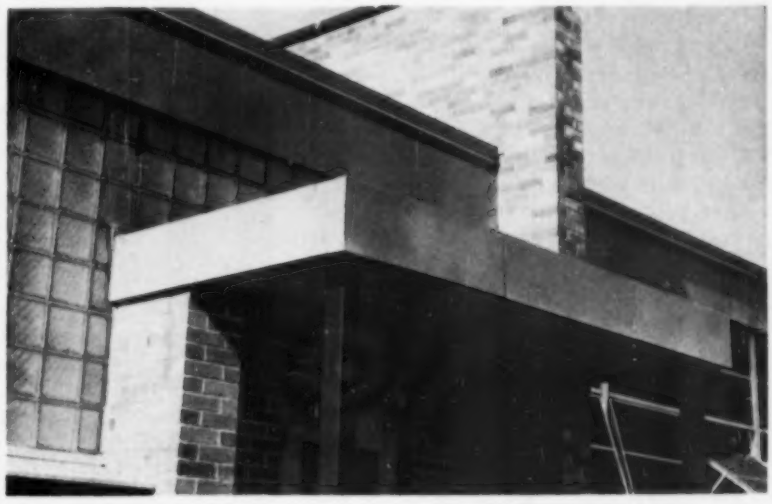
Dear Editor: As a structural engineer and a member of an architect-engineer firm, I could not avoid reading the article by Felix Candela (*June 1954 P/A*) and the discussions of the article by the other members of our profession—or to be more correct, reading them several times. The article and discussions, just as the structures they write about, are not entirely obvious at first glance.

It seems to me that the various writers have made a basic definition that is not entirely correct. I am referring to the apparent separation of intuitive analysis and mathematical analysis. Any analysis of a structure is only relative as to being exact or approximate. Take even the case of the simple beam. The actual complete stress condition cannot be determined. True, we can make assumptions based on experimentation and experience and apply these assumptions to make an educated guess—with the help of mathematical expressions, but at the same time we can just go ahead and guess the answer by intuition. If both methods give the same results, who is to say which is the correct way? I am by no means attempting to say that structures should be designed without the aid of mathematics. I am saying that any method of analysis, even the most vigorous mathematical solution, is an approximation and that the exactness of the solutions is relative. How can we, then, separate the analysis of a structure into intuition or mathematics, when we must use them together in any solution, and they are as compatible as bending and direct stress.

Candela seems to be quite disturbed by the majority of the structures that are being designed today. He expresses the idea that our vertical and horizontal structures are uneconomical and unattractive. Just as a thought, I wonder how a thin-shell structure would evolve if the client demanded roof parking or if it was necessary to obtain 50,000 sq ft of floor space on a 10,000 sq ft lot. As for being unattractive, I imagine Wall Street becomes as boring as an Eskimo village of igloos. But also, from Candela's viewpoint, I would feel quite perplexed in trying to inflate a rectangular balloon.

This sort of thinking can be carried to the ridiculous in many directions. However, it brings out a point I wish to make: that a structure should be designed to serve best the purpose for which it is to be used. Stereo-structures, just as any other type structure, can become stereotyped structures if they are used without sincere purpose and if buildings are forced into an enclosure

(Continued on page 20)



Ludington Junior High School,
Ludington, Mich.
Architect—Louis C. Kingscott & Associates

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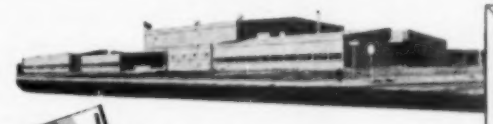


Write for Architect's Sketch Book of Panel Wall Designs.

THE *Erie* ENAMELING COMPANY
ERIE, PENNSYLVANIA

(Continued from page 19)

rather than an enclosure being designed around a function. There are, of course, unlimited numbers of forms for a solution to a given problem. The entire operation that is to take place within a building must be considered and from this a proper form arrived at that can be viewed with pleasure. No person is more aware of the advantages of pressure line structure than a structural engineer, nor is anyone more aware of their limitations.

I am in complete sympathy with Candela's desire for new and exciting forms. But at the same time, I am keenly aware that it is often necessary to "waste" material in order to save money, and a building that shouts solely for the purpose of making noise is not always a step forward.

In my thinking, a structure that meets all of the requirements of the society it is to serve, esthetically and otherwise, whether brand new or a thousand years old, is a sign of progress.

JOHN J. MILES
Seattle, Wash.

overhead percentage

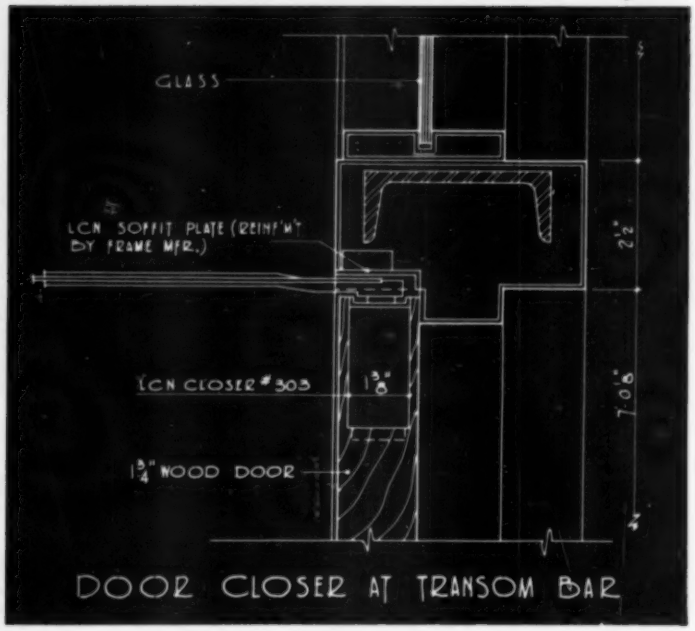
Dear Editor: Siegmund Spiegel's article in May 1954 P/A greatly interested me. I would like to inquire about one of the items listed in the Job Analysis. Under Item No. 19 was listed Overhead on Salaries (60 percent). Could you clarify the meaning of this Item? EARL R. WILSON
Wilson & Earnheart
Kansas City, Kan.

Dear Mr. Wilson: *With regard to your question, I would like to clarify this roughly as follows: first of all, the entire Job Analysis Chart was taken as an example only, and the figure of 65 percent is not a realistic one. The percentage of Overhead will vary from office to office. Overhead which incorporates all expense items not chargeable directly to an individual job must be accounted for, however, in order to provide a production-cost picture as realistic as possible.*

There are several methods of determining Overhead percentages. A great number of offices in the New York region use a method by which the percentage of indirect office expense which cannot be readily charged to an individual job is applied against direct technical payroll. This method does not take into account a partner's or a principal's nonproductive time. The AIA method of accounting, however, does make provision for inclusion of this item. This, of necessity, would raise the Overhead percentage and, depending upon the amount of "general" time a partner spends, may tend to distort the Overhead percentage figure.

Two of my articles (February 1954 P/A and March 1954 P/A) *go into considerable detail with respect to Overhead.*

SIEGMUND SPIEGEL



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To insure a proper bond for the adhesive, all paint must be removed. Because of the speed with which paint can be removed from large areas, the acetylene paint burner is often preferred for this type of work. However, machine sanding and chemical paint removers also do the job quickly and well.

Since adhesives will not adhere to oil- or grease-soaked floors, it is necessary that these floors be cleaned with a strong grease-cutting solution of tri-sodium phosphate or alkali-type cleaner. Floors should be rinsed well to remove excess chemicals which might destroy the binding qualities of the flooring adhesive.

For remodeling jobs, here's what an architect needs to know about . . .

PREPARING OLD SUBFLOORS FOR RESILIENT FLOORING

preparing old wood subfloors

	Type of Subfloor	Armstrong's Temboard Underlayment	Plywood
Single wood floor	Tongue-and-Groove	✓	3/8" or heavier
	Not Tongue-and-Groove	Do not use	1/2" or heavier
Double wood floor	Strips 3" or more	✓	3/8" or heavier
	Strips less than 3"	Renail or replace loose boards. Remove surface irregularities.	

Double floors too uneven to be sanded smooth: S-170 Flormastic, or hardboard, or 3/8" or heavier plywood.

With the continuing importance of modernization projects, resilient floors offer the architect the simplest means of utilizing the previous floor construction. However, no resilient floor is better than the subfloor over which it is installed, and satisfactory results depend to a very great degree on correct preparatory work. Such resilient floors as linoleum, Linotile, plastic flooring (such as Corlon), rubber tile, cork tile, vinyl-plastic-asbestos tile (such as Excelon), and asphalt tile are readily adaptable to remodeling jobs and will give many years of service if subfloors are properly prepared.

The installation of resilient floors in an old structure usually involves the conversion of what was once a wearing floor into a subfloor. Two main conditions must be met before such a floor forms a satisfactory base for a resilient floor. First, it is necessary to have a relatively smooth-surfaced subfloor, free from serious irregularities which would mar the appearance of the finish floor. Second, since nearly all resilient floorings are applied with adhesives, the old floor must be so prepared as to provide a satisfactory bonding surface for the adhesive.

Wood Floors. The preparation of old wood floors for the installation of resilient flooring depends on the type of construction:

1. Single wood floors, not tongue-and-groove. These should be covered with 25/32" T. & G. flooring or 3/8" or heavier plywood, of DFPA Plypanel grade or better.
2. Single wood floors, tongue-and-groove. Use Armstrong's Temboard® Underlayment or 3/8" or heavier plywood underlayment of DFPA Plypanel grade or better.
3. Double wood floors. If boards are 3" or more, proceed as (2), above. If less than 3", renail loose boards and replace defective or badly worn boards with new material. Fill cracks and holes with plastic wood or snugly fitting wood pieces. Remove surface irregularities, such as cupping, by sanding.

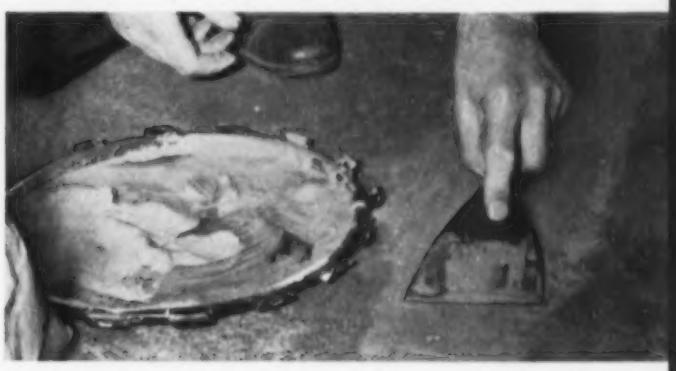
Wood floors which are too uneven to be sanded smooth should be covered either with a mastic-type floor fill made with Armstrong's No. S-170 Flormastic, or with hardboard, or with 3/8" or heavier plywood.

Old wood floors which have been painted or oiled present a special problem. Such treatments tend to prevent the penetration of the adhesive into the wood and deprive

Surface defects in the old floor often damage or otherwise mar the finished resilient floor. This can be prevented by carefully renailing loose boards and sanding or planing warped areas to floor level. All badly damaged floor boards should be replaced. Sanded areas should be treated with a sealing compound.

An underlayment, consisting of four-by-four sheets of hardboard or plywood, is advised for uneven subfloor areas which cannot readily be corrected by sanding. When laid over a tongue-and-groove floor, this underlayment provides a sound, smooth, and economical base for all types of resilient flooring.

Another method of resurfacing damaged wood and concrete subfloors is the use of a cold mastic floor fill. It can be laid directly over the old floor. Wood screeds and a straightedge may be used to maintain the thickness necessary for leveling. Cold mastic fills will not adhere to subfloors treated with oil.



Although resilient flooring adhesives will fill minor cracks and crevices in concrete subfloors, it is best that all holes, cracks, and crevices be filled with a reliable cement crack filler before installation is started. It is important that all concrete subfloors be allowed adequate drying time before installing flooring.

it of bonding strength. All traces of oil or paint should be removed by sanding, scraping, or, if necessary, by scrubbing with chemical solvents. The subfloor should be dry and free of all traces of solvents before the installation of flooring.

Concrete Floors. The problem of securing proper adhesion to concrete subfloors usually arises from dusty, chalky, or flaky concrete surfaces. This can generally be overcome by thorough sweeping with a wire brush to remove all loose particles, followed by a sealing treatment with Armstrong's Floor and Wall Size. All cracks, minor holes, and crevices should be filled with Armstrong's Crack Filler or a filler of equal quality before any resilient flooring installation is started. If concrete floors are too badly damaged to be repaired by crack fillers, the entire floor may be resurfaced with a fill made from Armstrong's Flormastic or a concrete topping. It is important that concrete topping and new concrete floors be fully cured before installing resilient floors.

Special Conditions. The above comments cover the most common conditions encountered in dealing with subfloors of wood and concrete. Other types of subfloors such as metal, terrazzo, and magnesite require special treatment which is so dependent on individual circumstances that it is not practical to lay down general recommendations. In such cases, Armstrong will be glad to give you assistance by telephone or by letter and, when the occasion demands it, will send a representative to study the subfloor condition and offer suggestions on proper methods of preparation.

ARMSTRONG CORK COMPANY makes all types of resilient floors for all types of interiors. Almost any flooring problem can be met with one or more of the floors in the Armstrong Line. As a result, we have no special bias toward any one type and can offer architects impartial recommendations on any flooring problem. Our main interest is to aid you in making a sound flooring selection.

Armstrong's sales representatives throughout the country will be glad to consult with architects and make specific recommendations for individual jobs. Your Armstrong representative has a wide variety of experience and training in resilient flooring and can also call upon Armstrong's Research and Development Center for assistance with special problems.

For helpful information on any flooring question, just call your nearest Armstrong District Office or write direct to Armstrong Cork Company, Floor Division, Lancaster, Pa.

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RESILIENT TILES
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A

how ceco engineering a school of changing

MET ARCHITECTS' REQUIREMENTS FOR 35-FOOT VERTICAL WINDOW TREATMENT WITH NARROW HORIZONTAL LINE RELIEF

Behind the bold, imaginative design and engineering that built the Keokuk, Iowa High School is a story of how Ceco helped solve a knotty lighting problem and achieve the architect's aim.

The Problem: Architects Perkins & Will visualized a design that would relieve the broad reaches of the Iowa countryside with a vertical effect and at the same time achieve a functional approach to better daylighting. Mindful that students need natural daylight, and relief for their eyes by gazing at distant outside scenes, the architects wanted a "wall of windows" that would perform all functions to an optimum degree. Standard window treatment would have left unsightly horizontal lines to mar the design's bold vertical appearance. Since the vertical lines of the windows were accentuated by the mullion treatment, it was believed necessary to minimize horizontal lines by keeping them narrow and of the same size. Here's how Ceco helped solve the problem: To create the illusion of a single 35-foot tall window, three Ceco Standard Steel Architectural Projected Windows were nested one on top of another and welded together by Ceco Construction Crews in the field. Vertical expansion was made possible by clips at the head and sill of each unit. Horizontal expansion was accommodated through the joints at the vertical "T" mullions. Thus, at no extra cost, the effect desired by the architect was achieved . . . a massive expanse of vertical lines, uninterrupted by heavy horizontal sight lines at the windows. The assembly method provided a tighter weatherseal, and a color scheme of windows that was most unique. For areas needing ventilation at inaccessible heights, mechanical operators were installed for easy control from the floor.

The Result: Viewed from a sharp angle, the protruding "T's" give the effect of a wall of steel. As the viewer moves toward right angles to the building, the windows begin to unfold, until, viewed head-on, they have the effect of a wall of 35-foot high windows. The "School of Changing Faces" is another example of architect-contractor-supplier teamwork in action. Next time consult Ceco on your building problem. Consult Sweet's files for Ceco windows and screens.

In construction products
CECO ENGINEERING
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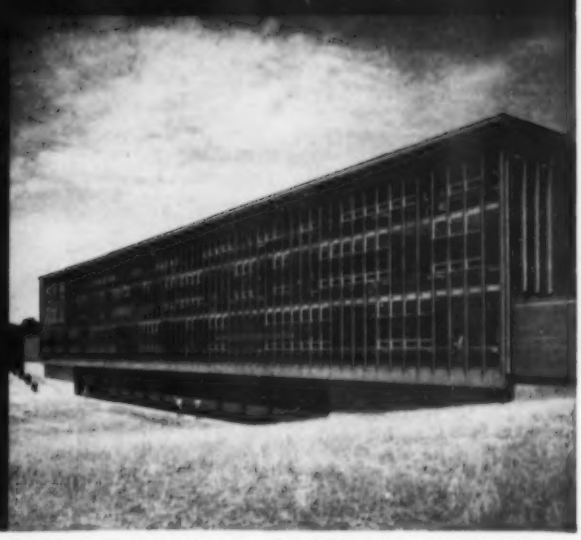
CECO — AMERICA'S WIDEST LINE OF STEEL AND ALUMINUM WINDOWS

provided faces...

Case history of CECO on-the-job performance

Here is another example of how architects achieve bold originality through the use of standard Ceco windows.

1—*View of wall of windows in Keokuk High School. Note how the "T" mullions create an illusion of a steel wall in the distant areas of the school face.*

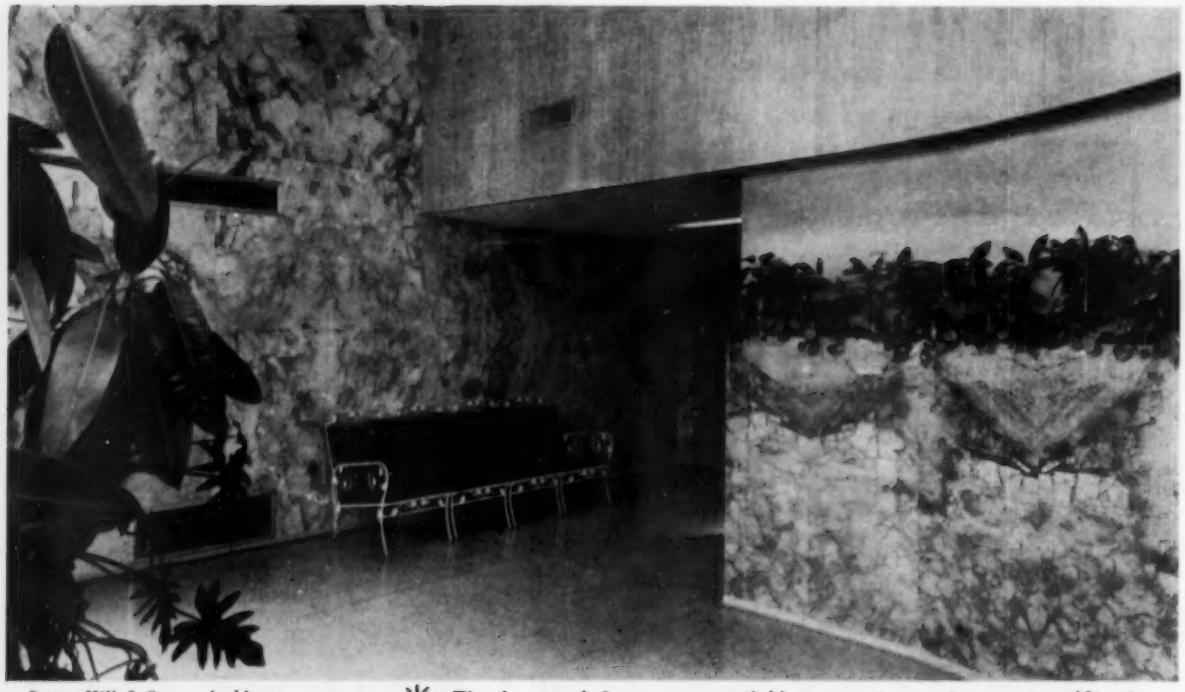


2—*As you move around this wing of the Keokuk High School, the face of the building begins to change in character as the windows become more evident, the mullions less prominent.*

marble *is economical*

proof . . . positive proof ✳

Proof means facts and figures, and this is the kind of proof we mean when we say that Marble is economical. Dozens of architects and building maintenance engineers have attested to the fact that Marble costs less than any comparable material. Not only is its initial cost comparatively small in relationship to the value it gives, but its real cost — including the all-important cost of maintenance — is unquestionably lower than many so-called economical materials.

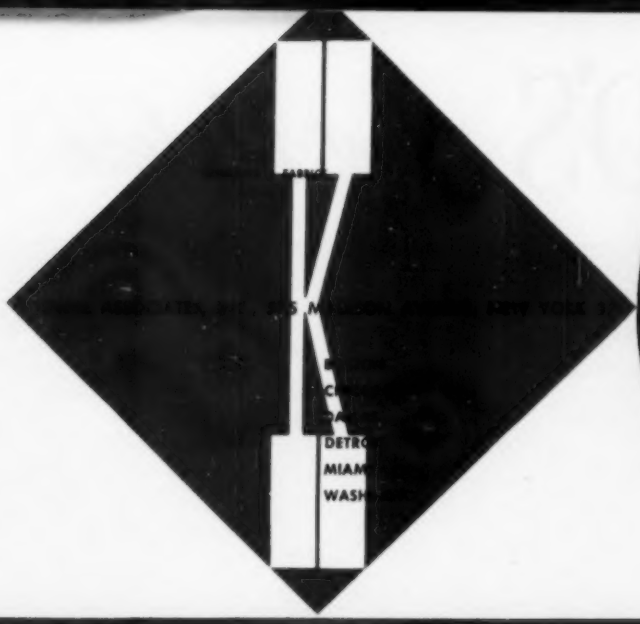


Sorey, Hill & Sorey, Architects

✳ The facts and figures are available to you in two important publications: "Proof That Marble Costs Less . . ." and "Further Proof That Marble Costs Less . . .", which are yours for the asking if you write to:

MARBLE INSTITUTE OF AMERICA, INC.
108 FORSTER AVENUE, MOUNT VERNON, NEW YORK

NEW LITERATURE: "Marble Forecast 1954-1955", "Marble In The Home", "Marble For The Modern Bank".



576

575

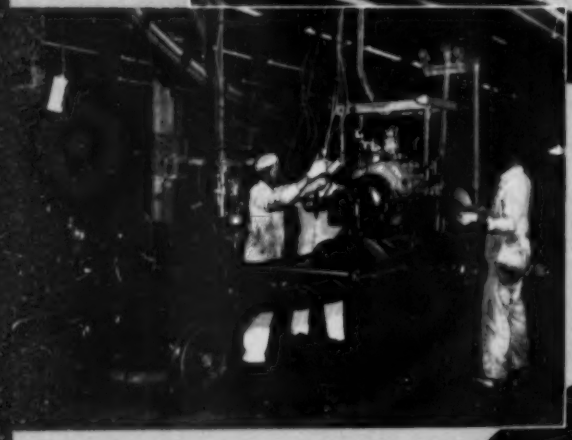
577

A dual purpose design
by Florence Knoll.
Foam rubber sofa on metal base,
available separately (#578)
or with attached unit
of drawer table (#575)
magazine rack (#576)
or open case (#577)
Full information on request

FORD'S *Most Modern*

Above workers in **Cushion Department**

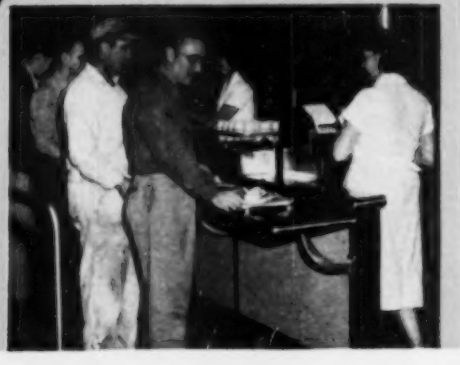
Length of Plant is 1500 feet. Width is 900 feet.



Chassis Line or sometimes called the "Build-up" is the portion of the Assembly Line where the completed engine, brakes, springs and many other items are assembled to the frame.

Motor Line is an example of team work in action. Shown above are three men working on the same engine. One is installing the wiring while the other two are attaching an automatic transmission.

Body Drop (right) is where two assembly lines meet. A trimmed body is lowered on a chassis and becomes the Final Line.

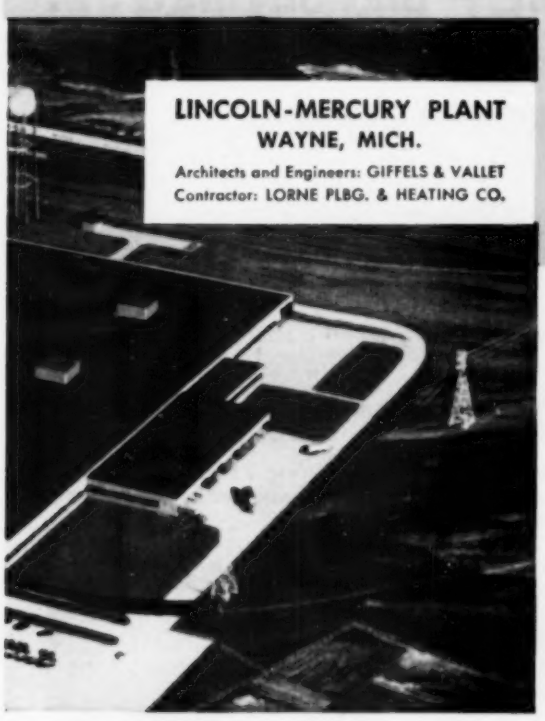


Comfort of employees in the modern **Cafeterias** is assured by Powers Control

POWERS CONTROL

- INCREASES PRODUCTION
- IMPROVES MANY PRODUCTS
- INCREASES OUTPUT OF EMPLOYEES
- REDUCES HEATING COSTS

Auto Assembly Plant Equipped with a

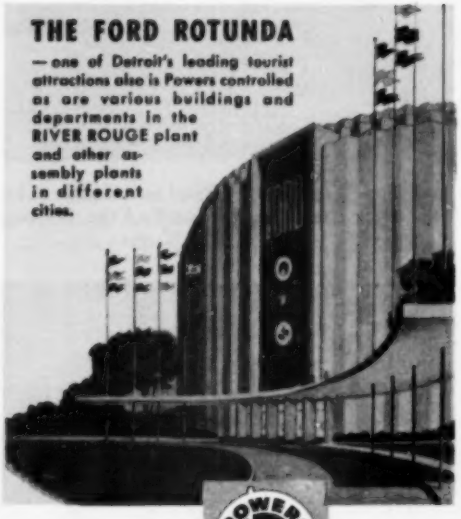


POWERS Pneumatic System of TEMPERATURE CONTROL

Comfortable, Even Heat at the Right Temperature for each department helps improve efficiency of employees and results in

- **Increased Production**
- **Better Products**
- **Lower Heating Costs**

—these are some of the year after year dividends THE FORD MOTOR CO. will receive from its investment in Powers control.



THE FORD ROTUNDA

— one of Detroit's leading tourist attractions also is Powers controlled as are various buildings and departments in the RIVER ROUGE plant and other assembly plants in different cities.

With its almost 1,500,000 square feet of floor space, nine miles of conveyor lines and many advanced features this ultra modern LINCOLN-MERCURY plant is the last word in efficiency. It is a show place among assembly plants.

Into its receiving docks come some 4800 separate parts (with an entire engine as one part). Out of its delivery door, at the rate of 300 cars per 8 hr. day, go completed automobiles tested, checked and ready for driving.

Here a Powers pneumatic control system regulates the steam heating used in the assembly and manufacturing areas and the conditioned air in the paint spray department, first aid and hospital room, cafeterias and administrative offices.

Experience gained by Powers here and in many other important large and small buildings may be helpful to you. When problems of temperature or humidity control arise, contact our nearest office. There's no obligation.

THE POWERS REGULATOR CO.

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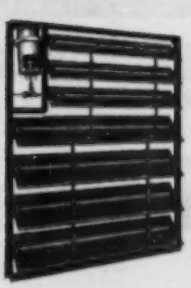
'53 (h27)



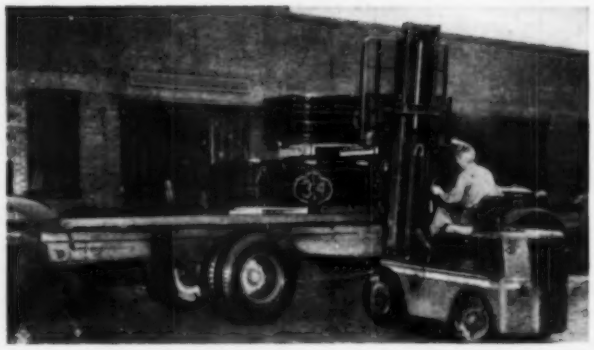
. . . eliminate packing maintenance, leakage of water or steam, or loss of vacuum.

Good plastering—big savings...

Savings with Wheeling Metal Lath actually start with manufacturing. Precision machines in control from start to finish eliminate human error.

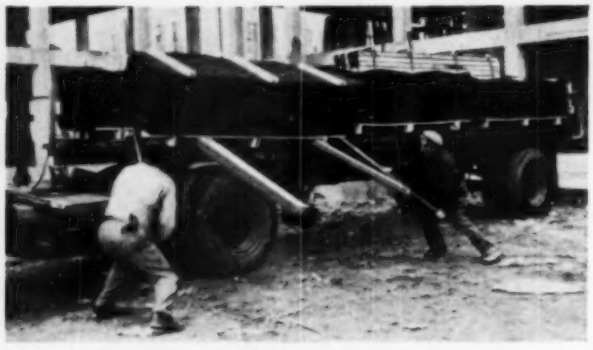
All sheets are uniformly flat . . . no buckling, no fish-tailing . . . machine-cut to uniform, true right-angle corners. Every sheet is a perfect rectangle.

Savings mount when Wheeling *packages* Metal Lath in its exclusive "Engineered" Package . . . 500 sheets in compact lifts of fifty 10-sheet bundles. Follow a load of Wheeling Metal Lath from the factory to the warehouse to the job-site to the job:

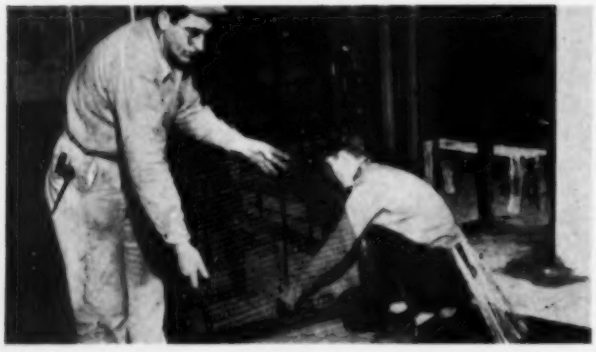


1. Unloading. Tremendous saving right here. One man with a fork truck unloads a car in 45 minutes . . . job formerly took 16 man-hours!

4. Truckload of Wheeling Metal Lath at the job-site. Each Package is uniform . . . just the way it left the factory . . . trued up parallel sides and angle ends uncrushed.



5. Ready to unload. Insert levers behind center and . . . *heave*. Falling off the truck can't damage *that* Package. It's rugged! It's solid! It's tight!



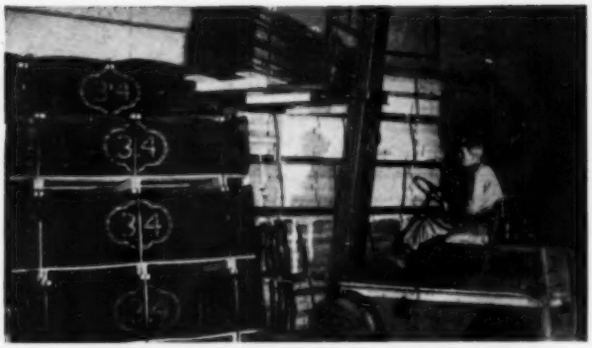
8. Lathers get busy . . . work swiftly . . . every sheet is true, flat, rigid. Minimum selvage edge prevents overlap bulges and avoids waste.

9. Ready for the plasterers. Wheeling Metal Lath *guarantees* a good plastering job. That's because it "gives" and "breathes" . . . allows for contraction and settling.

Atlanta Boston Buffalo Chicago Columbus Detroit Houston Kansas City

WHEELING CORRUGATING COMPANY • BUILDING

get both with Wheeling Metal Lath!



2. Storing — another big saving. Wheeling's "Engineered" Metal Lath Packages stack ceiling high without shaking or wavering . . . because the Packages are *fla't*

3. Color-keyed near ends and number-stenciled for weight identification are time-saving features. Each bundle is tagged for easier counting.

6. Workman has to deliberately *cut* open the Package. This, plus *weight* of the Package makes pilferage virtually impossible . . . another saving.

7. All set. Lather inserts baling hook into bundle and hoists with block and tackle to desired floor. Every sheet is uniformly rectangular. Every corner a perfect 90°.

10. Another job well done with Wheeling Metal Lath . . . and savings, too, all along the line because of handling ease, packaging care, product superiority.

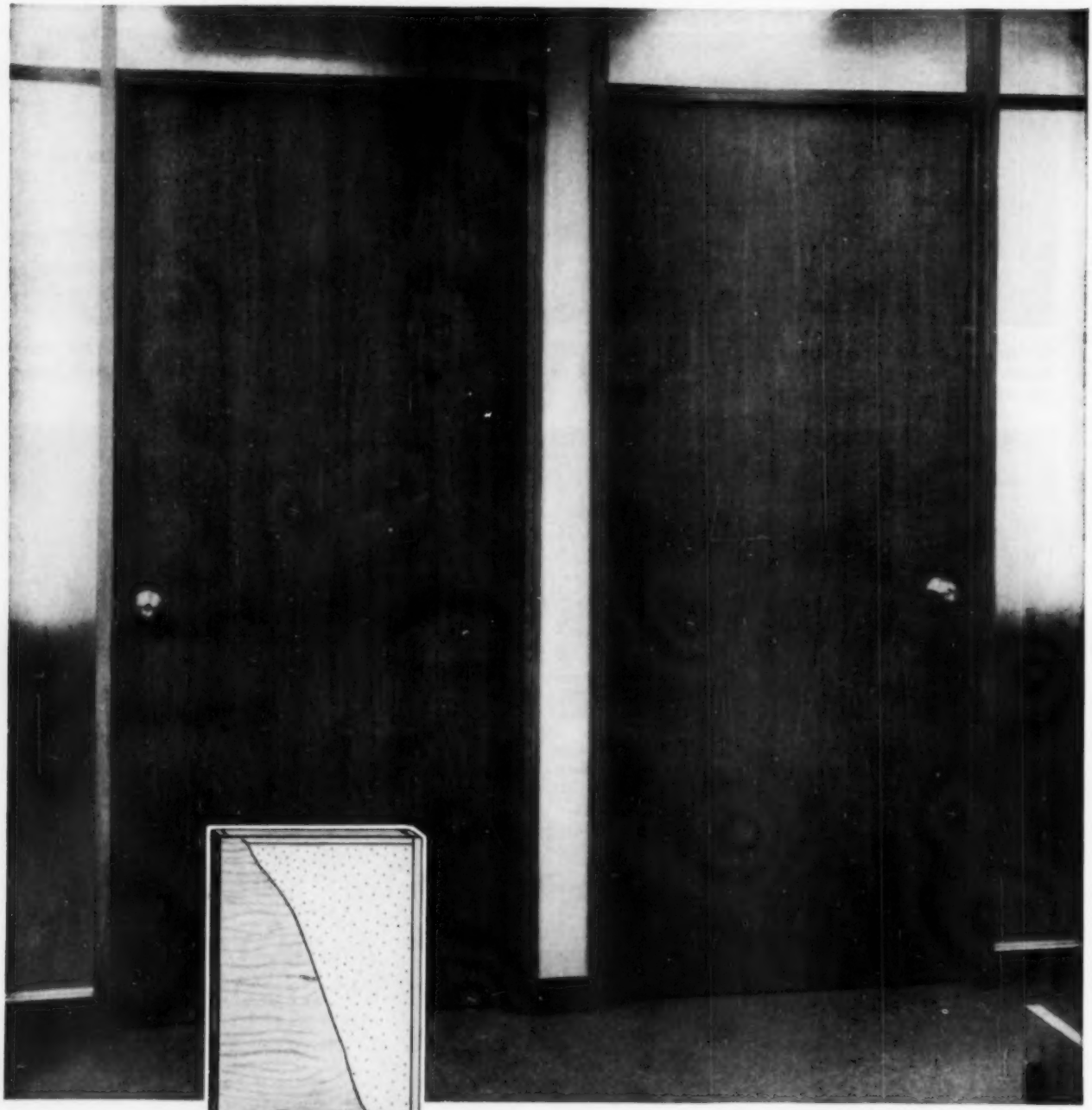
Wheeling

The complete line of Wheeling building materials includes Metal Lath and Metal Lath Accessories, Expanded Metal, ExM Angle Frame Partitions, Steelcrete Reinforcing Mesh, Steelcrete Vault Reinforcing, Tri-Rib Steel Roof Deck, Cop-R-Loy Galvanized Sheets, and SofTite Galvanized Sheets.

Louisville Minneapolis New Orleans New York Philadelphia Richmond St. Louis

MATERIAL DIVISION • WHEELING, WEST VIRGINIA

A new concept of safety with beauty



WELDWOOD STAY-STRATE DOORS have the same guarantee as Weldwood Fire Doors; made with the same Weldrok core. Unmatched for beauty and serviceability. Most dimensionally stable wood-faced door made for indoor or outdoor use. Economical, available in a variety of wood faces and standard sizes.

Weldwood Movable Partitions and Partition Panels have *same* incombustible Weldrok core and *same guarantee* as Fire and Stay-Strate Doors.

. . . WELDWOOD FIRE* DOORS with a new incombustible mineral core— WELDROK®

Strong, light-weight, solid-core Weldrok construction now gives Weldwood Fire Doors even greater degree of fire protection. Backed by the most outstanding guarantee in the industry. Yet they cost no more!

Weldwood Fire Doors have an unmatched record for absolute safety and dependability under every type of service condition. That is why for years they have been standing guard in leading hospitals, schools, business institutions and better built homes.

OUTSTANDING FIRE PROTECTION. Weldrok, the important new safety feature of Weldwood Fire Doors, was developed and is being manufactured exclusively by the United States Plywood Corporation. Weldrok is an inert, incombustible mineral core material offering a higher degree of fire protection, plus higher insulation value. Weldrok helps keep the door straight and true for the life of the installation. Weldwood Fire Doors with new Weldrok core are listed by the Underwriters' Laboratories for Class "B" and "C" openings.

OUTSTANDING BEAUTY. Weldwood Fire Doors have long been known for their *beauty* as well as *safety*. They are available in a wide variety of handsome hardwood faces . . . birch, walnut, Korina*, rift oak and in almost any exotic wood veneer you may want to specify. Furnished in standard sizes with special sizes and cutouts to order. If you are planning to install wood paneled interior walls, doors can be ordered with faces made from matching veneer flitch.

OUTSTANDING GUARANTEE. Weldwood Fire Doors have the most sweeping guarantee in the industry. Read it and see for yourself! Every word of it is backed by the United States Plywood Corporation, world's largest plywood organization.

For further information consult with your lumber dealer or contact the architects' and builders' service section at any of the 73 United States Plywood or U.S.-Mengel Plywoods distributing units in principal cities, or mail coupon.

WELDWOOD *Fire* DOOR GUARANTEE

United States Plywood Corporation unconditionally guarantees the Weldwood Fire Door, if properly installed, against warping, twisting, or manufacturing defects for the LIFE OF THE INSTALLATION. If any Weldwood Fire Door should fail to meet these standards, we will replace said door without charge, including all labor costs of hanging and refinishing.

UNDERWRITERS' LABEL ON EVERY DOOR. Weldwood Fire Doors are listed with the Underwriters' Laboratories, Inc., for Class "B" and "C" openings. The door has been thoroughly tested both for fire resistance and structural integrity.

WELDWOOD FIRE DOOR FEATURES • Bears Underwriters' label • Doors are edge-banded with solid hardwood treated with class "A" fireproofing agent • Incombustible Weldrok core • Crossbanding is 1/16" hardwood veneer permanently bonded to core with waterproof resin glue • Face Veneer: Birch is standard; any wood face available on order.

*U. S. PAT. NO. 2569950

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FIRE DOORS AND STAY-STRATE® DOORS

United States Plywood Corporation

World's Largest Plywood Organization

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Please send me complete information on Weldwood Fire and Stay-Strate Doors. PA-10-54

Name .....

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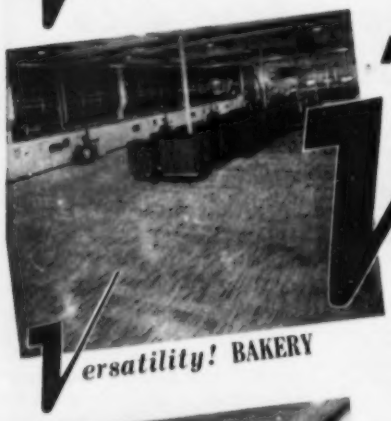
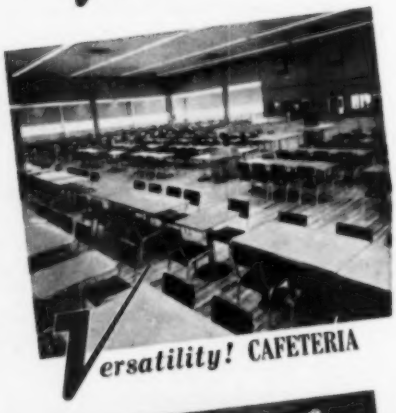


ALL FLOORED with

Versatile!

NORTHERN HARD MAPLE

Neither science nor Nature herself has yet produced a flooring material that serves so many varying needs so well and so long as *resilient* Northern Hard Maple. Here are nine typical areas where maple is a normal, and eminently sound, specification. There are a great many others. Produced in strip, block and patterned designs, under strict **MFMA** grading and dimension regulations, and properly laid, maple serves for years with simple, routine maintenance. It's tough —asks no babying. It's bright, smooth, tight, crevice- and splinter-free. Specify it with the confidence it has earned so well. See Sweet's Arch. 12k-MA, or write for AIA full-color File Folder.



MAPLE FLOORING MANUFACTURERS ASSOCIATION
Suite 583, Pure Oil Building
Chicago 1, Illinois

FLOOR WITH *NORTHERN* HARD MAPLE
BEECH AND BIRCH

No window "monotony" here! In this house, Silentite double-hung units, casements and picture window form an attractive combination. The Silentite "family" offers the right window for every purpose.

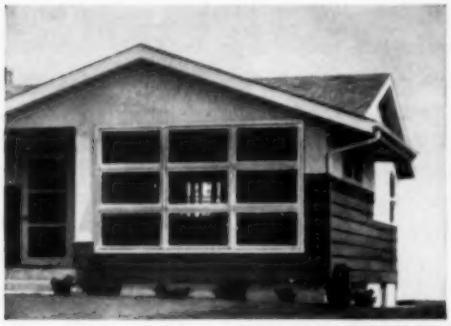
For variety in windows there's nothing like a "family"

From window walls to basement sash, there's window *variety* for every architectural need in the Curtis Silentite "family." That means a single, dependable source for all your window requirements. You can give home owners exclusive window features and advantages, developed through Curtis research—plus the assurance that materials and workmanship of every Curtis Silentite window are *fully guaranteed.*

So take your choice of the Silentite family—double-hung units—casements—awning windows—panel windows—convertible windows—and many others. With any, or all, you'll achieve the kind of customer satisfaction that sells homes today.

These smart, single-light Silentite casements are truly weather-tight. The Curtis adjuster provides fifteen times the opening force of the ordinary lever type. Screens and insulating glass furnished. Available in several sash styles.

Available in twelve sizes, Silentite awning windows provide controlled ventilation—with positive weather-tightness—in any climate. Adaptable to any type of wall construction, Silentite awning windows come completely factory assembled and carton-packed for easy installation.



It's a casement—awning...or hopper-type window...as you choose—this new Curtis Convertible! More than a thousand window combinations are possible with this versatile window that is always "right side up."

CURTIS WOODWORK
SILENTITE
the 'insulated' window

Curtis makes a complete line of architectural woodwork and birch kitchen cabinets for homes of all types. Make your next home "all Curtis."

Curtis Companies Service Bureau PA-10-54
200 Curtis Building
Clinton, Iowa

Please send literature on the Curtis line of Silentite windows.

Name.....

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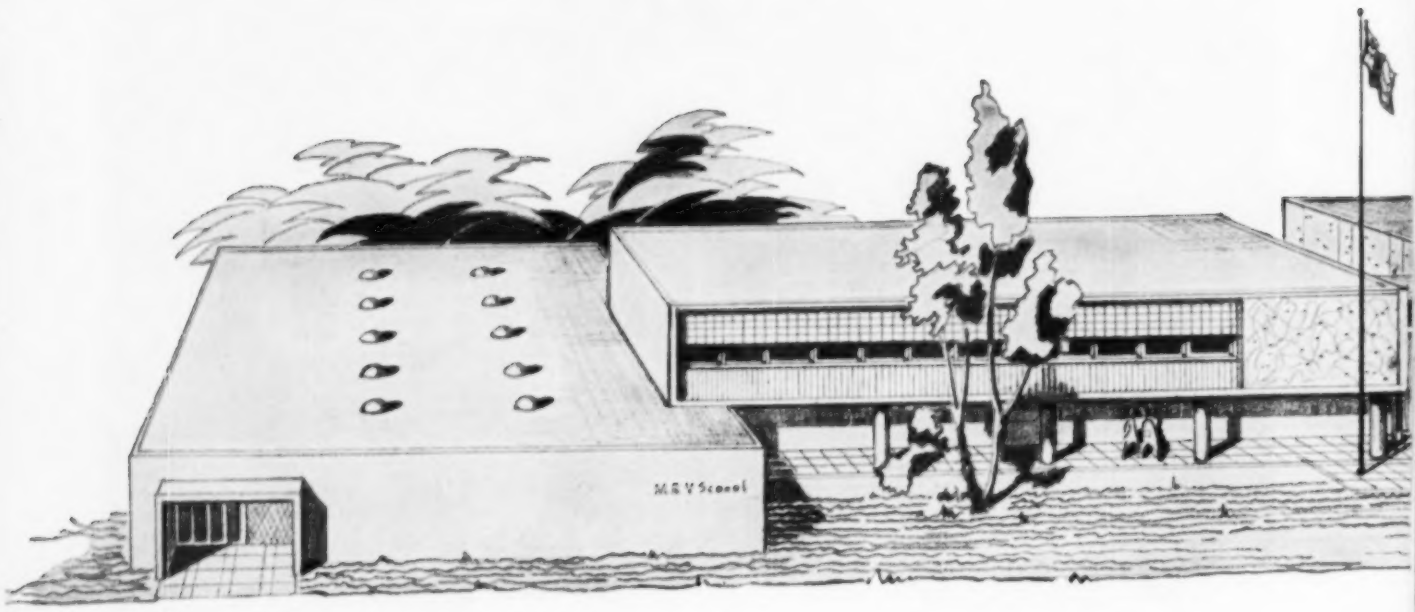


IT TAKES MORE THAN MODERN DESIGN TO KEEP SCHOOL BOARDS HAPPY

We're talking about modern electrical practices that complement modern design and directly effect a majority of the functions a building must perform.

We're talking about the kind of controlled lighting and power facilities it takes to provide:

completely adequate and dependable power for the many electrically operated building services;

safe, positive power control through modern, automatic protective devices;

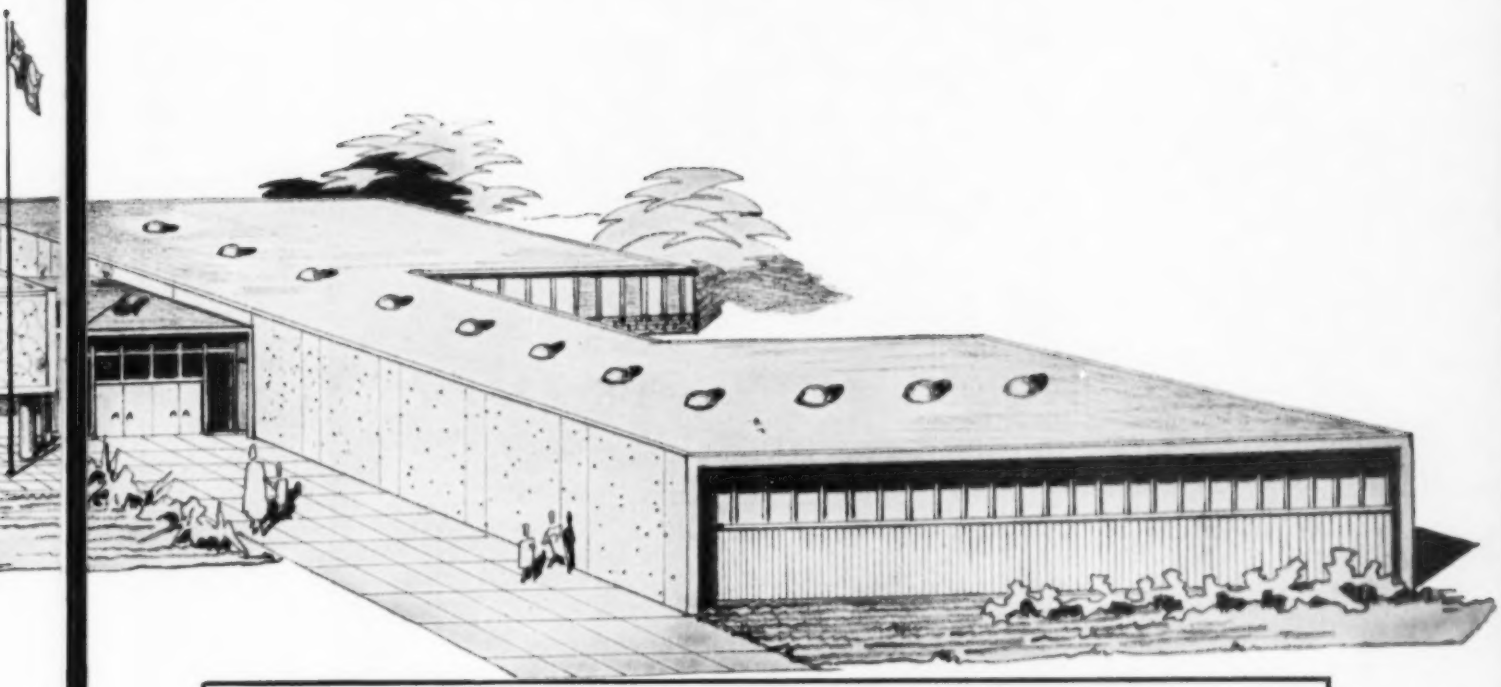
electrical flexibility to meet future expansion programs easily and economically.

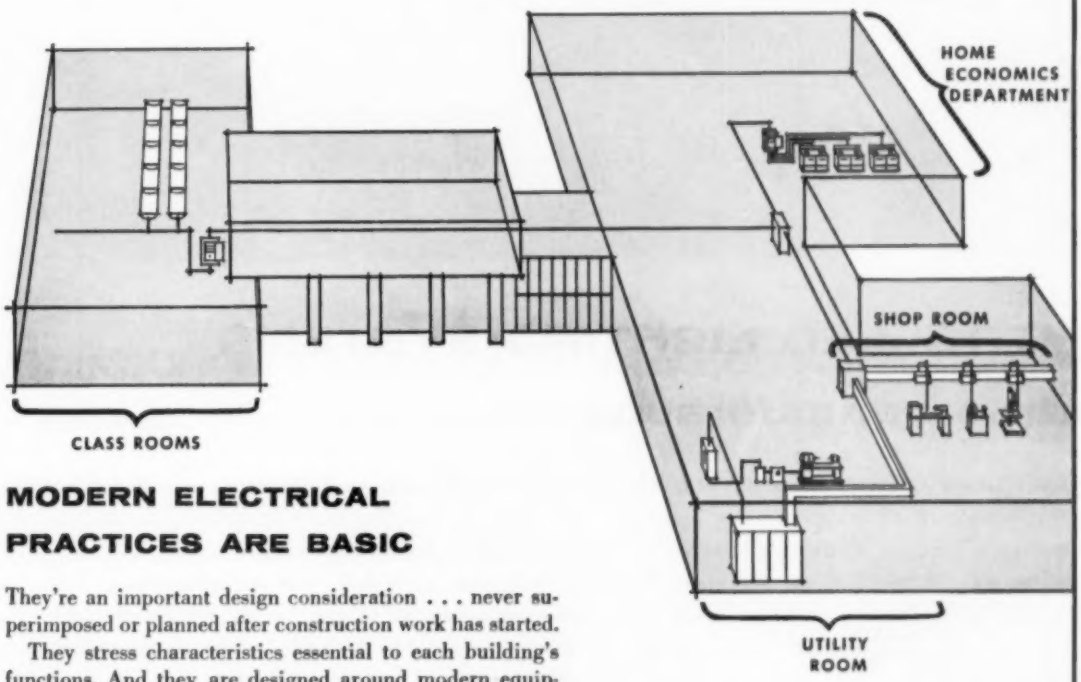
Those are things modern electrical practices mean. Certainly, they are an integral part of the building that should be weighed heavily in the study stage and developed as a part of your design planning.

If carried out properly, this objective is automatically realized: You have matched the electrical facilities to the standards you've set for design. And, you'll be giving the school board a better building—one that provides for the maximum comfort, safety and well-being of its students.

A call to your nearby Westinghouse Office will bring a construction application engineer ready to help you integrate modern electrical practices into your next school design. Get in touch with him during the study stage. Westinghouse Electric Corporation, 3 Gateway Center, P. O. Box 868, Pittsburgh 30, Pa. DP-5005-A

YOU CAN BE SURE...IF IT'S Westinghouse



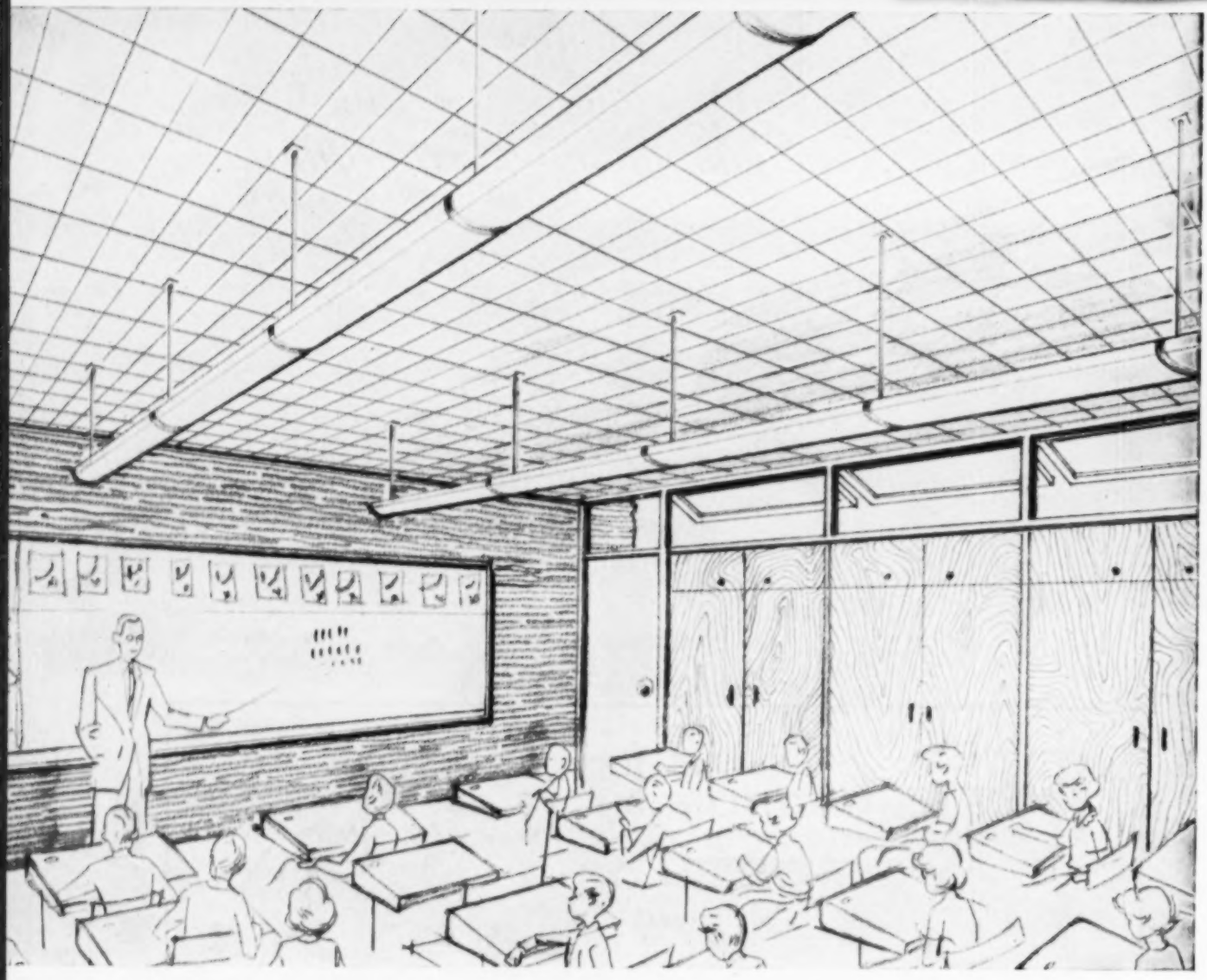


MODERN ELECTRICAL PRACTICES ARE BASIC

They're an important design consideration . . . never superimposed or planned after construction work has started.

They stress characteristics essential to each building's functions. And they are designed around modern equipment—electrical "blocks" that build electrical reliability, safety and convenience... and have the inherent versatility to handle changing power loads easily and economically.

Specific examples of modern electrical practices as well as the "blocks" that serve as their foundation are shown on the next four pages.



CONTROLLED LIGHTING SYSTEMS . . .
a prime consideration

Where practical, we all realize the desirability of taking full advantage of natural light. As a primary lighting source, however, it has these disadvantages:

It cannot cover the entire classroom adequately. On bright days, it is uncomfortable—unless you block out the glare. On dark days, it is inadequate—far below the required lighting level.

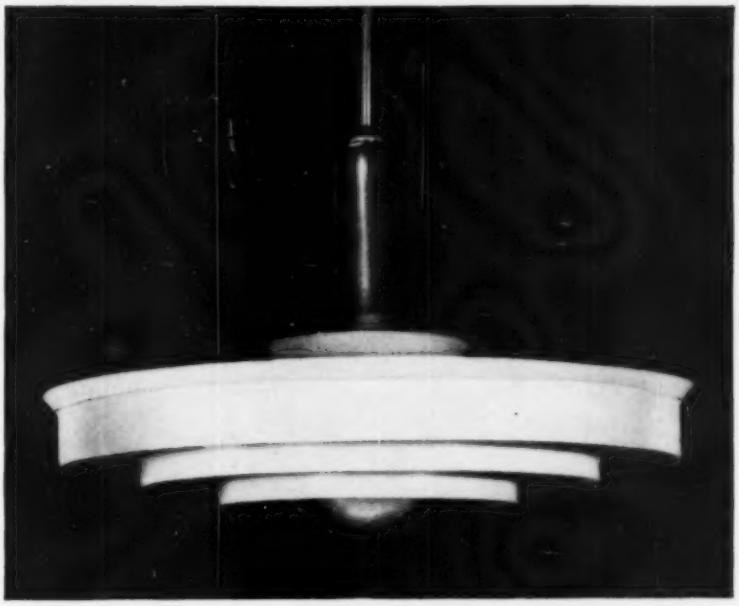
And the trend to lower ceiling heights and larger classrooms is further eliminating daylight as a principal lighting means.

Therefore, it is a basic architectural assignment to provide adequate *controlled* lighting systems . . . for day-in, day-out use . . . in all parts of the room.

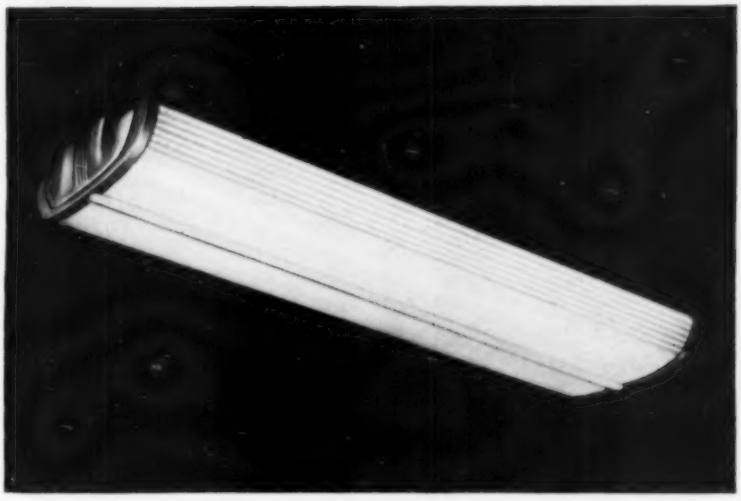
The two basic sources— incandescent and fluorescent —shown on these pages are completely modern and blend well with building design.

Economically, incandescent would seem to be less expensive. But that's only from an initial cost standpoint. Over-all, your client will find fluorescent systems less expensive to operate and maintain.

Regardless of the system you design, *if done well* it will provide adequate wiring for future lighting improvements. Proper installation of an incandescent system today means that a change-over to higher level fluorescent lighting can be made tomorrow without a need for rewiring. DP-5005-B



Concentric Ring Incandescent luminaires are low in first cost to meet quality lighting requirements when initial funds are limited. Metal rings shield silver bowl lamps—eliminating glare and shadows. All light is directed to the ceiling.



CD-160 Semi-Indirect Fluorescent luminaires spell the ultimate in comfort for classroom lighting. They direct 72% of the light to the ceiling—the best method for illuminating classrooms. And they readily adapt to varying requirements . . . become an integral part of the room.

CIRCUIT BREAKER PANELBOARDS . . .
for modern circuit protection

School lighting systems are only as modern as the type and quality of the panelboards that back them up. Here's why:

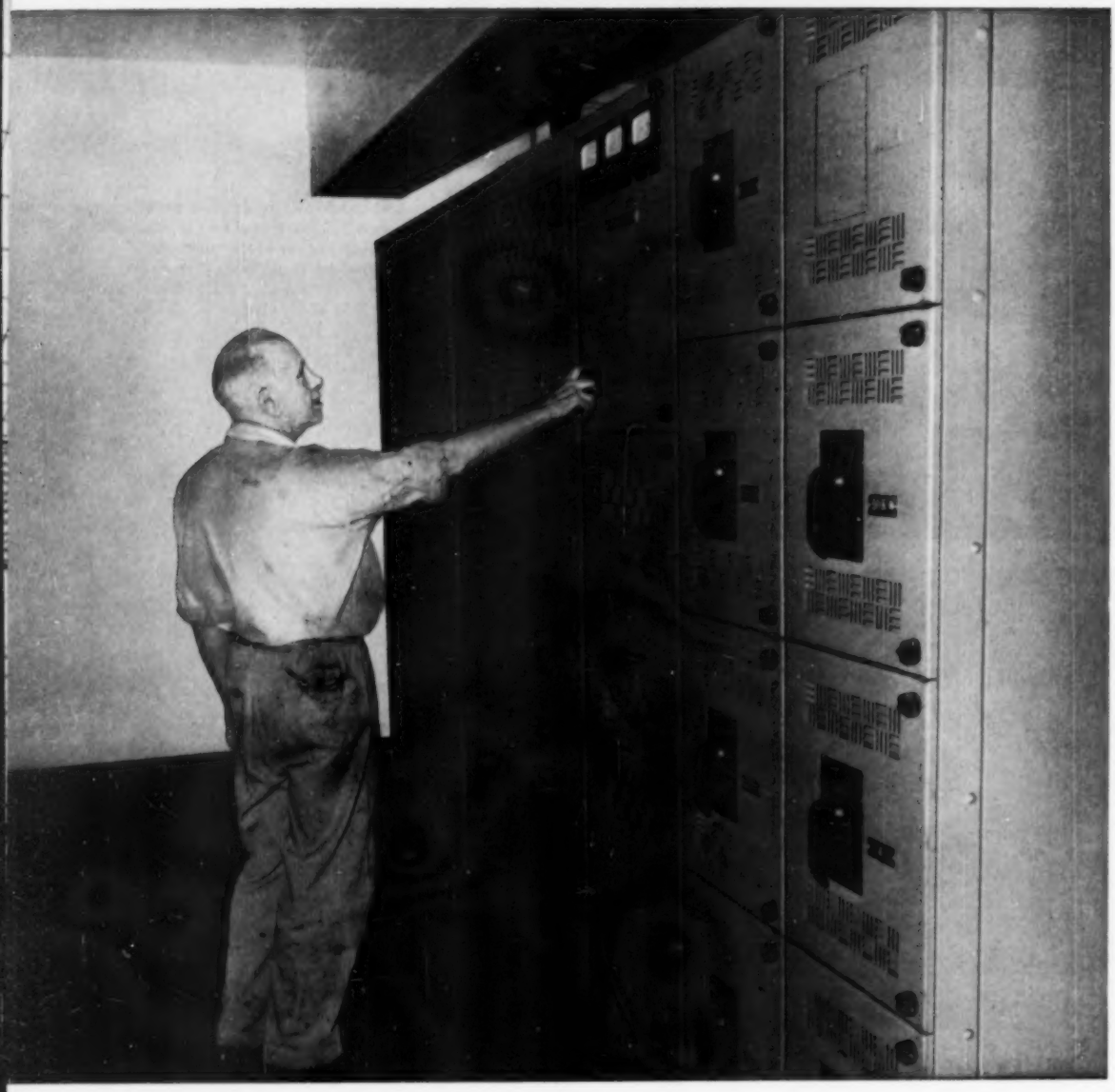
Panelboards are the nerve center of a building's electrical system . . . the means of controlling and protecting the lighting, appliance and power circuits.

Modern electrical practices call for a panelboard like the Type NPLAB for lighting and appliance loads, at right. It provides circuit breaker protection—eliminating the danger of over or under fusing since there are no fuses to replace. Even inexperienced personnel can spot the tripped breaker after an overload. The breaker handle will have moved to a center position. By flipping it back, service is safely restored.

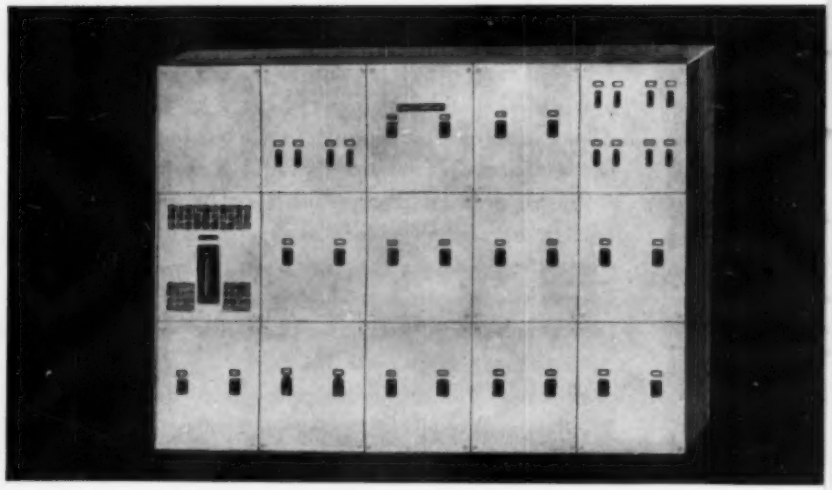
Further, the NPLAB houses more circuits in less space than most other panelboard types. It can be fabricated with blank spaces to provide for easy, economical addition of new circuits.

DP-5005-C

YOU CAN BE **SURE**...IF IT'S Westinghouse



Coordinated Dry-Type Power Center—is the modern way to step down high-voltage power. Virtually a packaged substation that includes a transformer and air circuit breakers in a safe enclosure. Delivered to the building ready for immediate installation.



Building-Type Switchboard—the foundation of all electrically operated services when a building is supplied with low-voltage power. Provides positive circuit protection and switching equipment for incoming line and main feeders. Totally-enclosed sheet steel construction for added safety.
DP-5005-D

MODERN POWER CONTROL . . .

safe, convenient, flexible

Inclusion of modern power control and distribution facilities in your design planning means this: You will have provided for completely dependable and safe operation of a building's many power consuming services.

And more. Not only will you have covered today's ventilating and lighting needs, the cafeteria appliances and shop machines . . . but also any electrical requirements that develop in the future.

Consider the Building-Type Switchboard (lower left)—an example of modern distribution facilities. It is used when a school is supplied from a low-voltage power source. It contains in a single, compact unit the control for the incoming line and main distribution feeders. New sections can be added easily and economically because all parts are standardized.

Consider the Coordinated Power Center (at upper left). Here is a packaged substation that reduces high voltage to utilization levels and provides modern circuit protection. Its dry-type transformer eliminates the vault required for liquid filled transformers and reduces maintenance. It is housed in a compact steel enclosure for maximum safety to personnel.

Other examples of the kind of equipment that goes with modern electrical practices are shown at right. DP-5005-E

YOU CAN BE SURE...IF IT'S

Westinghouse

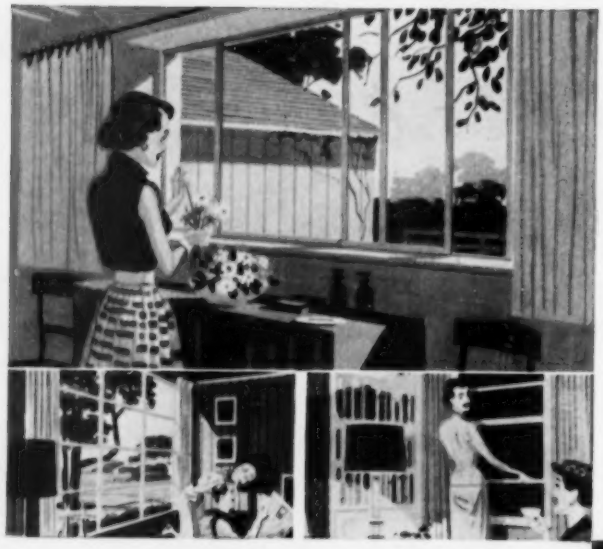
Linestarter—in shops and utility rooms. Provides special control for starting, stopping and protecting the many motors in today's buildings. Groups of Linestarters in a single enclosure become a control center.

AB-I Circuit Breaker—protects circuits and students wherever power equipment is used. No fuses to replace. No danger of over or under fusing. After overloads, service is safely restored by flipping handle on outside of enclosure.

Bus Duct—the modern method of distributing power throughout the building. Plug-in type, above, is ideal for manual training departments and machine shops. Plug-ins every foot make it easy to relocate the machines.

For Cost-Saving, Comfort, Convenience

. . . Look to RUSCO!

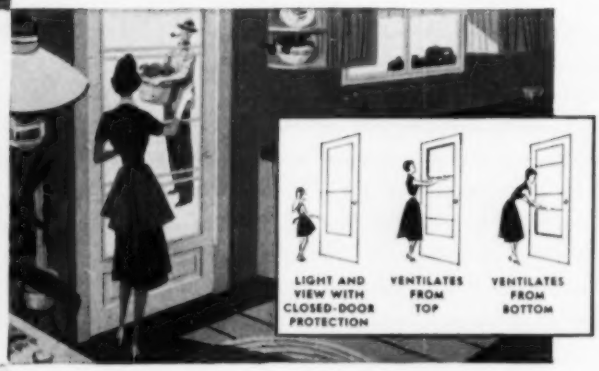


Fully Prefabricated, Ready-to-Install RUSCO PRIME WINDOWS

Rusco Prime Windows are complete, ready-to-install units made of hot-dipped galvanized tubular steel. They are pre-glazed, finish-painted with baked-on enamel and fully weatherstripped. Insulating sash (optional) gives exclusive MagicPanel® rainproof, draft-free ventilation. Rusco's Fiberglas screen will not rust, rot, corrode or stain—never needs painting. Sliding glass panels are removable *from inside* for safe, easy cleaning. Rusco Windows make big savings in installation time and cost. Available in horizontal slide and vertical slide models. Also in 3-panel and 4-panel "Fulvue" style for extra-large window areas.

Prime house door . . . screen door . . . ventilating window—all in one unit!

Rusco 3-in-1 Windo-Door inserts fit standard 1⅜" and 1¾" wood doors. Give you a twin-slide operating window, complete with full Fiberglas screen panel, in a door, thus providing added window area in the room at minimum cost, plus added light and controlled ventilation. Ideal for kitchen, terrace, side door or porch. Properly used, Rusco Windo-Doors can effect big economies in construction and enable you to offer more house for the money.



Permanent Year 'Round Protection *plus* Wonderful Eye Appeal!

RUSCO All-Metal VENETIAN AWNINGS AND VENETIAN-TYPE DOOR CANOPIES

Metal door canopies and window awnings are among the fastest-growing and most wanted home equipment items on the market. Rusco Awnings and Canopies are sturdily constructed, beautifully finished in baked-on enamel and styled with horizontal lines that conform with good architectural design. Awnings give "see-through" visibility, free ventilation, controlled light.

For illustrated literature and name of your nearest Rusco dealer—phone, wire or write

"Always one step ahead of the weather" with RUSCO

THE F. C. RUSSELL COMPANY

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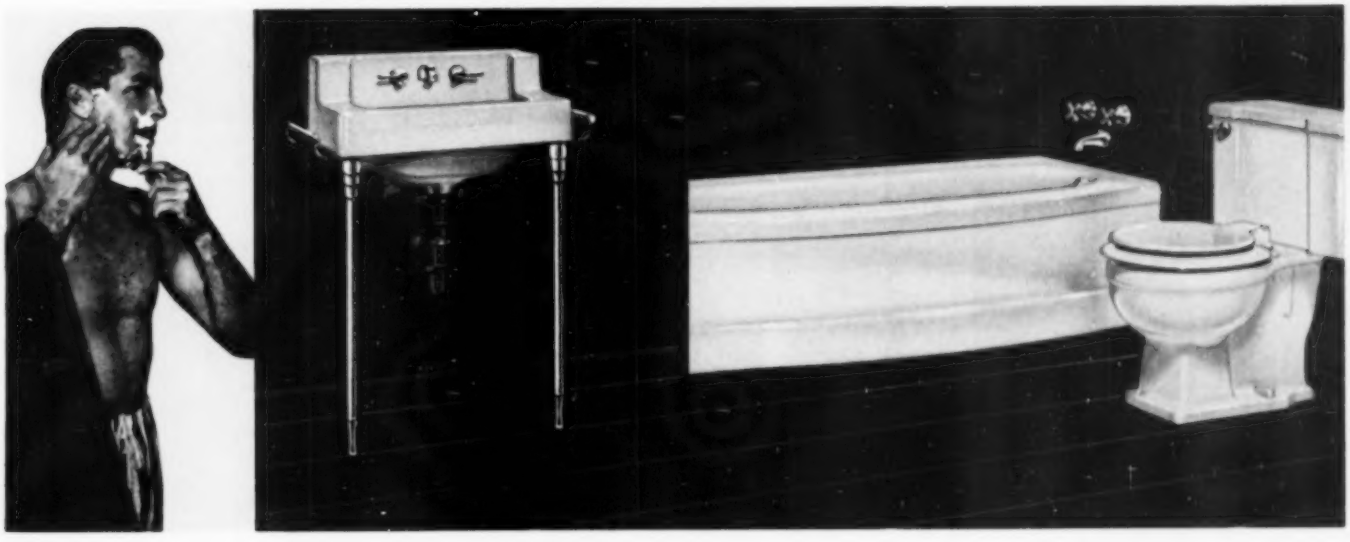
It's so much easier to sell a home with two bathrooms of BRIGGS BEAUTYWARE!



Prospects getting choosey? Sales a little harder to close? Smart builders and architects nowadays are making their sales job easier by including two Briggs Beautyware bathrooms *in all their homes!*

No other feature adds more to a new home. There's extra value—extra sales appeal—at a cost that's actually very small, considering the additional profit you stand to gain. And the second bath adds so *little* extra to monthly mortgage payments that you can offer this big *plus* feature while keeping your homes competitively priced.

All of your prospects will be impressed by two bathrooms—even more so by handsome Briggs Beautyware. You can give them their choice of the four beautiful Briggs pastel colors—Coral, Sandstone, Sea Green or Sky Blue—in addition to sparkling white.

Let this low-cost luxury help sell *your* homes. Always specify *two* sparkling Briggs Beautyware bathrooms in color!

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National Magazine advertisements like this one are carrying the Briggs Beautyware story to millions of American readers. Besides selling Briggs fixtures in beautiful color, these eye-catching ads are urging potential customers everywhere to demand the convenience of *two* Briggs bathrooms!

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BRIGGS

Conveniently located telephone outlets in the kitchen, bedroom,
hall or den and concealed telephone wiring . . .
these are important details of interest to your clients.
And there's an easy, inexpensive way for you to provide for them.
Specify telephone conduit.

Your Bell Telephone Company will be glad to help you plan economical conduit installations. Just call your nearest Business Office.

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To give you a better picture of how other manufacturers are cutting costs and improving their products, we have prepared a portfolio of ideas that should be in your file. It's yours free for the asking.

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Please send me the BUILDING CONSTRUCTION idea portfolio

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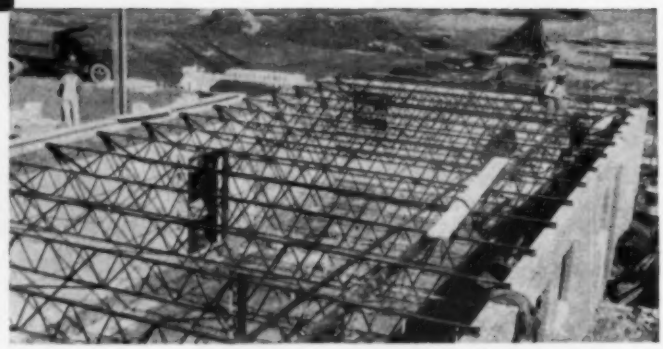
For Fire-resistant Roofs that are Light in Weight

...TRUSCON FERROBORD® STEELDECK AND "O-T"® STEEL JOISTS

Chaney High School, Youngstown, Ohio.
Scheible and Shaffer, architects.
Charles Shutrump and Sons Co., contractors.

Other Truscon products in this new school include Clerespan® joists; commercial projected, architectural projected, and intermediate combination steel windows; screens; series 31 industrial doors and frames; Ribplex® metal lath; lath clips; welded wire fabric and reinforcing bars.



This Truscon "package" provides a roof construction that is light in weight, fire-resistant, long-lasting, and economical. It is quickly erected and can be insulated to any required degree.

Truscon "O-T" Steel Joists for floor and roof supports are light, strong, and fire-resistant. Being light in weight, they lessen the time and labor required for erection, save material in supporting framework and foundations.

The Ferrobord Steeldeck can be clipped or welded directly to the joists and comes in lengths that span three or more purlins. It is easy to handle, easy to place. It roofs large areas quickly . . . flat, pitched, or curved. Erection is done from above. No scaffolding needed. Exclusive design allows for full-length interlocking and greater strength.

When laid, Ferrobord's top surface presents a smooth, unbroken face that is ideal for the application of insulation and built-up waterproofing.

The key to successful installation of this type of roof construction is the use of *both* companion Truscon products. They'll be delivered to your job site *on schedule as promised.* Get Truscon's figures for jobs you now have on the boards. Ask your Truscon representative, or write:

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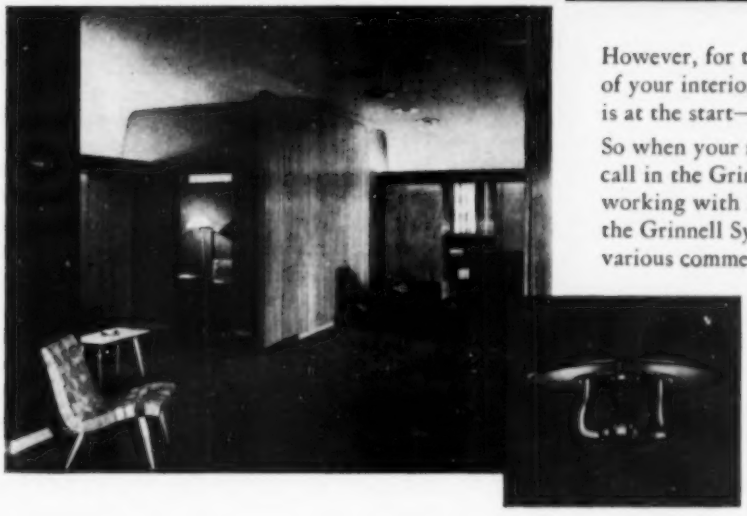
Extending just a scant inch below the line of the ceiling, Grinnell *Flush-Type* Ceiling Sprinklers are hardly noticeable. Yet they mount unremitting guard against fire—stand ready 24 hours a day to provide dependable protection from the very first flame.



However, for the sake of retaining the attractiveness of your interiors, the time to figure on fire protection is at the start—while your plans are still developing.

So when your next project is in the blueprint stage, call in the Grinnell engineer. Long experienced in working with architects, he can give you details about the Grinnell Systems of fire protection designed for various commercial, industrial and institutional buildings. There is no obligation. Grinnell Company, Inc., 284 West Exchange Street, Providence, Rhode Island. Branch Offices in Principal Cities.

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NOW you can eliminate the waste and high costs of overdesigned framing

by using

Penmetal LIGHTSTEEL STRUCTURAL SECTIONS

For framing stores, shopping centers, filling stations, garages, motels, and other light commercial buildings.

ELIMINATE

expensive overdesigned sections

Fabricated from structural-grade, strip steel by cold forming, Penmetal LIGHTSTEEL structural sections are designed specifically for strength, light weight and low cost. No longer do you have to pay for extra load-carrying capacity which you do not need. And yet, Penmetal LIGHTSTEEL sections carry all the benefits of conventional steel framing.

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The unique LIGHTSTEEL design, incorporating as basic elements both track and bridging, provides a built-in fabrication feature that eliminates expensive fabrication. Track sections are sized to fit over, and bridging sections inside of, the flanges of joists, studs and channels. When assembled, it is easy to weld, bolt or rivet them together for permanent strength. Shop assembly of wall panels saves time and money in field erection.

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expensive erection equipment

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Send for new 12-page catalog which gives complete specifications, engineering data and safe loads for all stud and joist sections. Ask for a copy of catalog SS-3.

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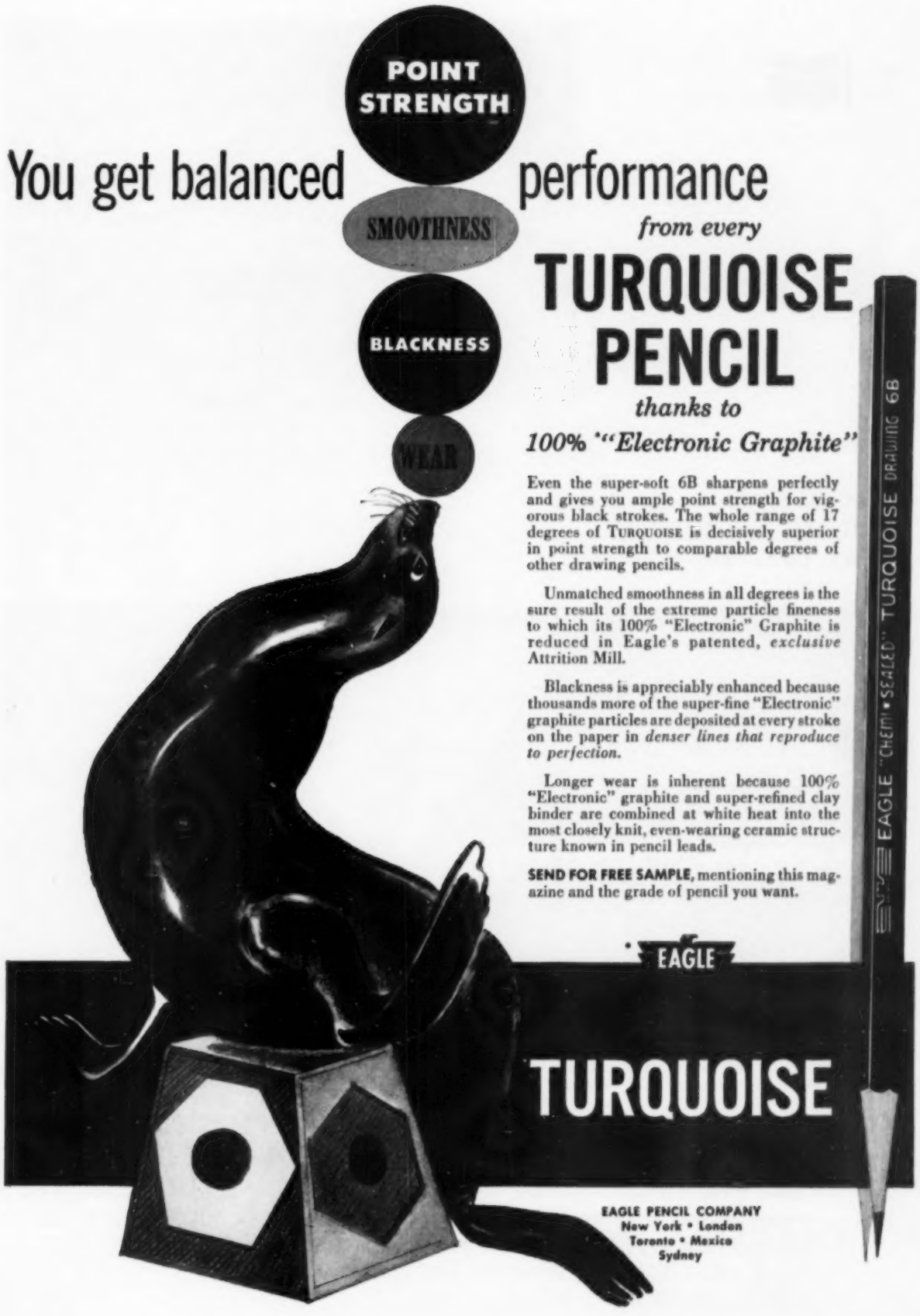
Plant: Parkersburg, W. Va.

Penmetal

PM-30



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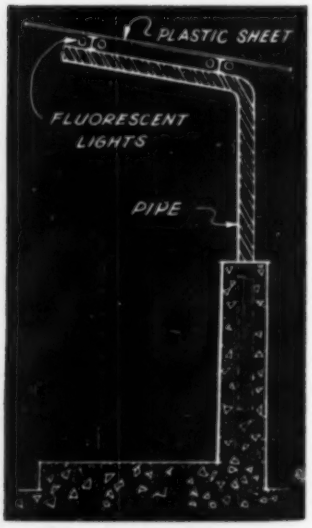
Materials / Methods | MONSANTO

BY DAY this handsome green plastic roofing for the walk leading from the parking space to the entrance of Bettendorf's super market in St. Louis, Missouri, acts as a handsome eye-catcher.

Reinforced Plastic Functions As Display and Roofing For St. Louis Super Market

BY NIGHT the same walk becomes even more striking when the lights go on. Here, the architect used the green color and translucence of the reinforced plastic panels to give his client an attractive display with a minimum investment.

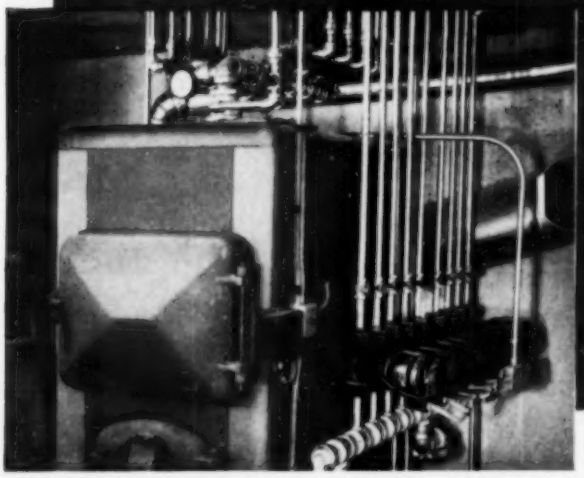


PLASTIC PANELS USED IN CONSTRUCTION are made of polyester plastic reinforced with fibrous glass. These panels come in a variety of colors. They are rust-proof, rot-proof, weather-resistant. They have good dimensional stability and a high strength-to-weight ratio although they should not be used under sustained heavy loading. Other advantages include light weight, handsome appearance, easy handling and installation.

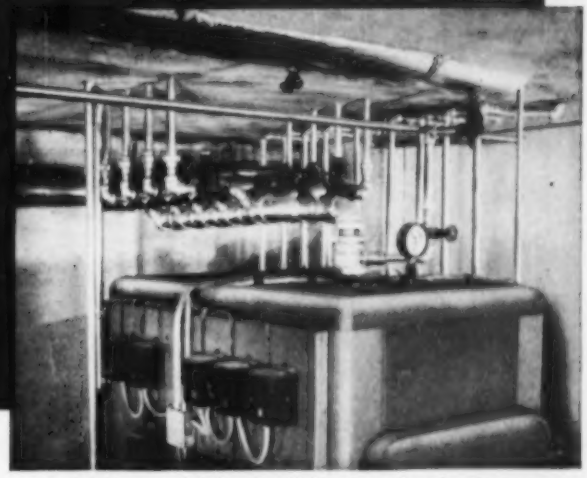
Monsanto contributes to reinforced plastics by furnishing basic chemical raw materials . . . phthalic and maleic anhydrides, fumaric acid and styrene monomer.

For more information on polyester-fibrous glass materials write Organic Chemicals Division, MONSANTO CHEMICAL COMPANY, Box 478, St. Louis 1, Missouri.

EVERY TENANT HIS OWN WEATHER-MAKER



Nine B & G Boosters, individually controlled by room thermostats, circulate hot water to each zone.



B & G Flo-Control Valves, installed in the supply mains, prevent an override in temperature when the Boosters shut off.

For QUIET operation and long, trouble-free life, you can depend on the B & G Booster. Send for Bulletin DG-950—see the reasons why this pump is the biggest seller in the field.

Some like it warm, some like it cool...but in this apartment building, B & G *Hydro-Flo* Heating keeps everybody happy. Each tenant can have the temperature considered most comfortable—*and raise or lower it at will!*

The building is divided into nine zones, each equipped with a thermostatically controlled B & G Booster and a B & G Flo-Control Valve. Economy of operation as well as comfort is achieved, since zoning permits compensation for differences in exposure, solar effect and temperature preference.

When you install a B & G *Hydro-Flo* Forced Hot Water System, you've laid the groundwork for the most modern comforts and conveniences. You've provided better heating ...uniform temperature—warm floors—draftless rooms. You've assured fuel economy and the convenience of low-cost, all-year domestic hot water. Snow-melting and summer cooling equipment can be added at any time.

Send today for booklet FS-953.

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HOFFMAN STEAM TRAPS

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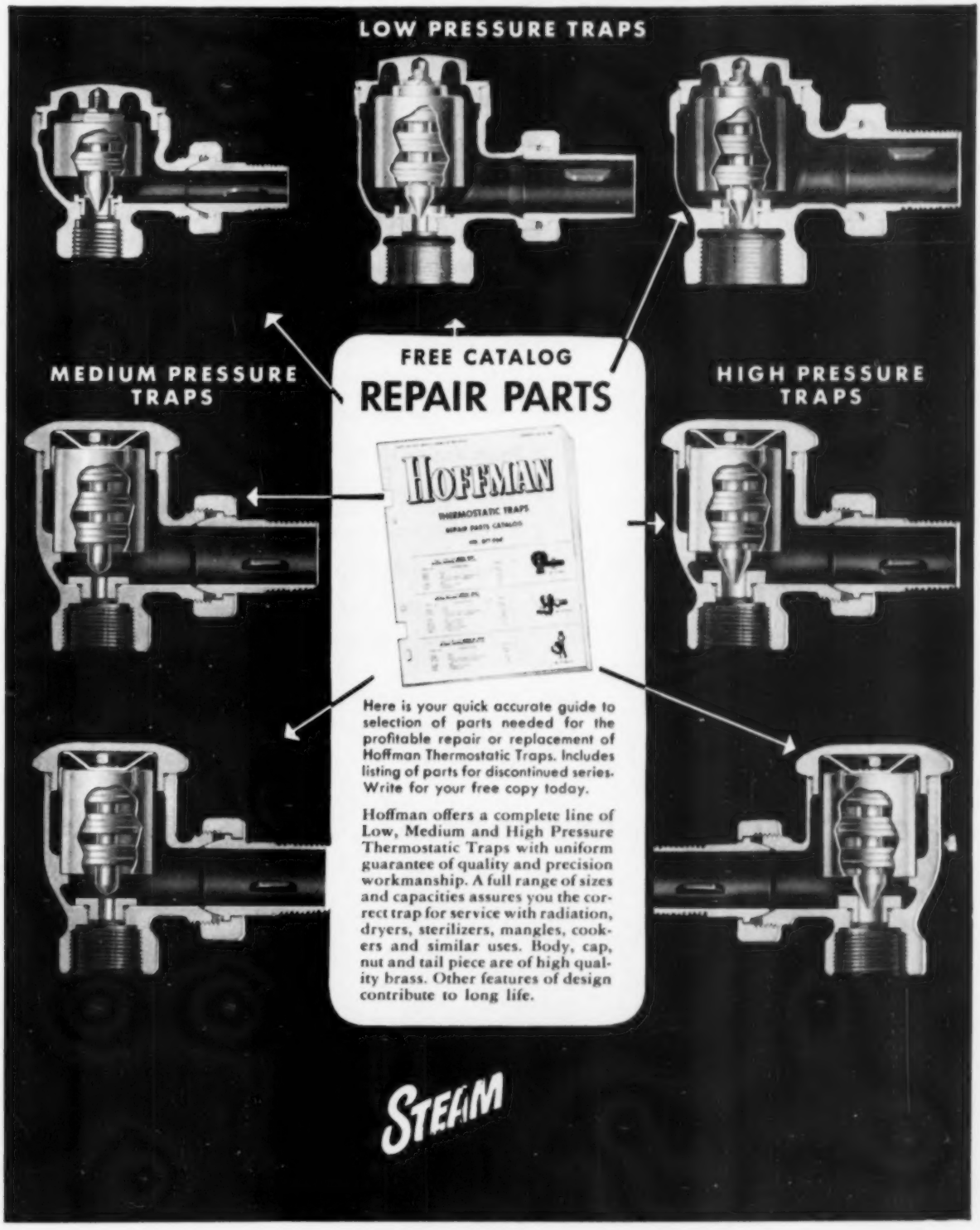
LOW PRESSURE TRAPS
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Hoffman offers a complete line of Low, Medium and High Pressure Thermostatic Traps with uniform guarantee of quality and precision workmanship. A full range of sizes and capacities assures you the correct trap for service with radiation, dryers, sterilizers, mangles, cookers and similar uses. Body, cap, nut and tail piece are of high quality brass. Other features of design contribute to long life.
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Package Units—2, 3, 5, 7½ and 10 tons. Choice of Open or Semi-hermetic Compressors . . . and 15 ton packaged central type units.

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The Curtis line is precision-built to assure a long life of trouble-free service. You can specify Curtis air conditioning equipment with the assurance that it will never let you down.

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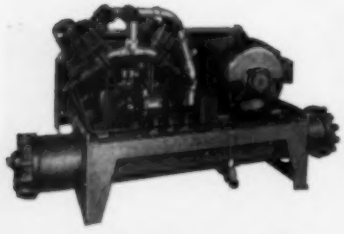
Residential Cooling and Heating Units

Air handling units, cooling towers, and evaporative condensers



Water Cooled Condensing Units— through 80 tons

Curtis REFRIGERATING MACHINE DIVISION

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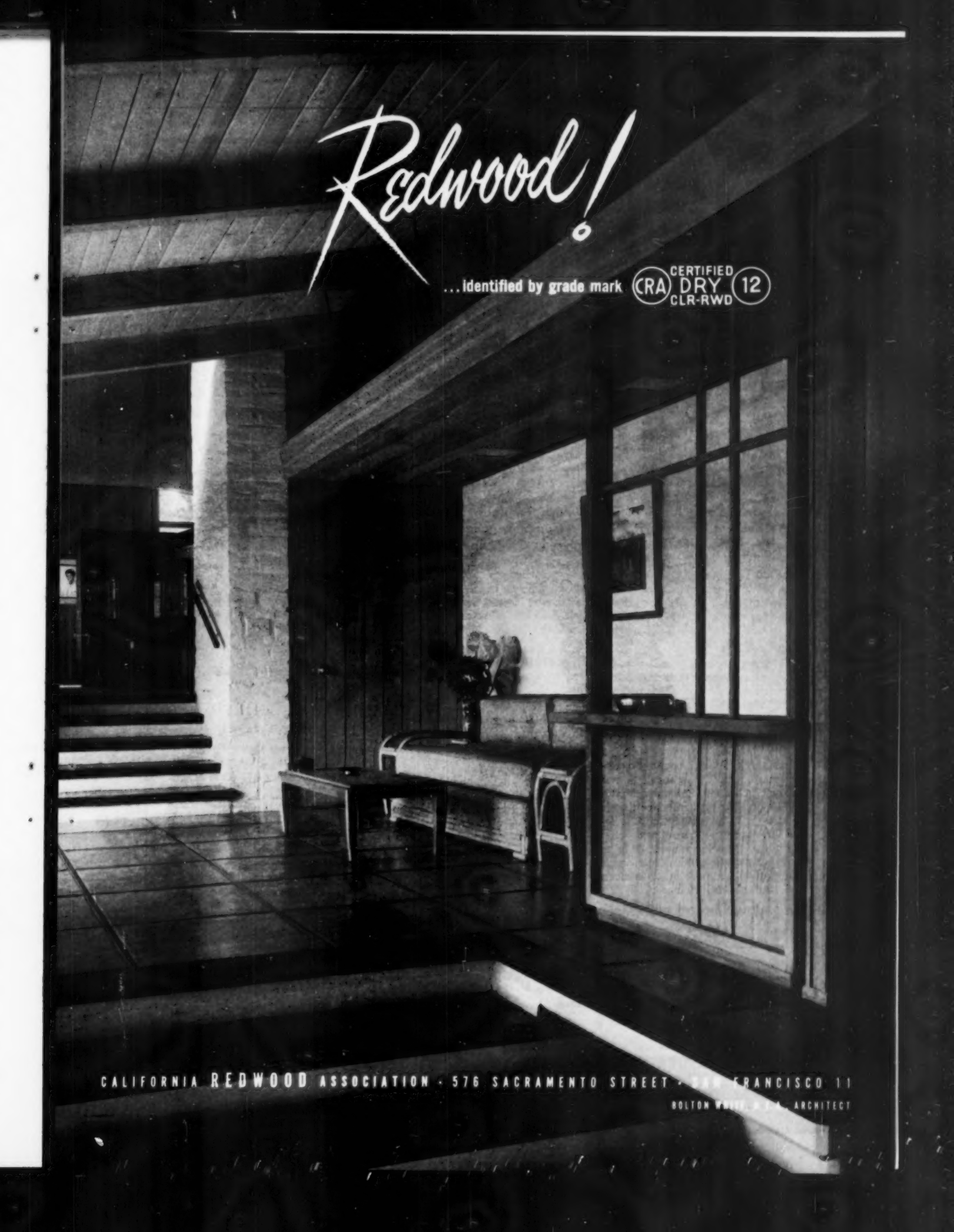
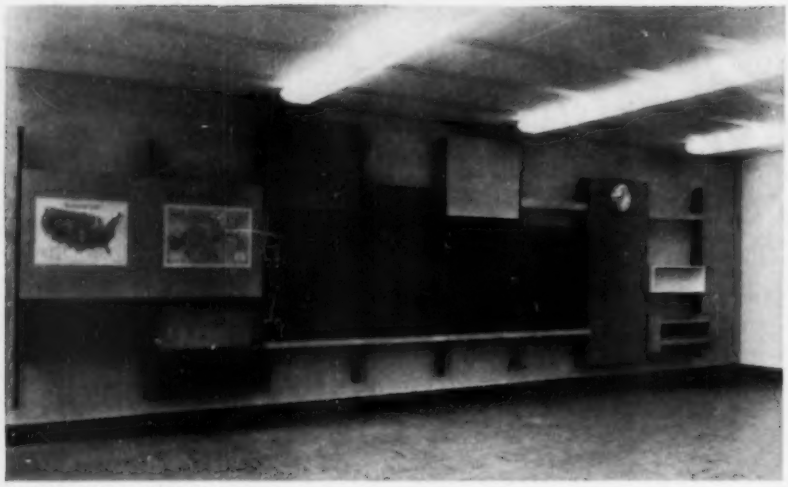

Redwood!
...identified by grade mark
CRA
CERTIFIED
DRY
CLR-RWD
12
CALIFORNIA REDWOOD ASSOCIATION · 576 SACRAMENTO STREET · SAN FRANCISCO 11
BOLTON WHITE, A.I.A., ARCHITECT



ARCHITECTS: KETCHUM, GINA & SHARP

"Live Walls"—A great new teaching aid made possible by Armorply Chalkboard*

Unique "Moduwall" installations in three new schools, Mineola School District, N. Y., feature new guaranteed-for-the-life-of-the-building Armorply Chalkboard.

The Moduwall Company of New York has developed a "live wall" treatment of the old school blackboard that is winning the praises of teachers and school heads alike. The kids think it's great, too!

This new device makes it possible to adjust the height of the chalkboard to the height of the child without costly alterations. Any schoolroom can now be used for any age group of pupils in a matter of minutes.

Armorply Chalkboard was specified because it more than met all the exacting requirements for an installation of this type. Armorply Chalkboard has a *tough* porcelain-on-steel† face that is bonded to Weldwood plywood. It defies abrasion; can't buckle, warp, chip or shatter. Its cool green surface takes chalk beautifully and is easier on young eyes. It's a lot easier to clean and needs no maintenance.

MAKES VISUAL AIDS POSSIBLE. One of the best features of Armorply Chalkboard is that small magnets are attracted to its steel face, making visual aid devices and *live* classroom demonstrations possible.

AVAILABLE WITH AND WITHOUT TRIM FOR ANY TYPE OF INSTALLATION

Armorply Chalkboard is more economical to install because it requires no costly fixed grounds. It can be mounted on any wall with a minimum of effort. It takes only one trip to the job site to install both chalkboard and trim.

Armorply Chalkboard is available in standard stock size panels and in special sizes to order. Plan on using Armorply Chalkboard in your next installation. *Remember, it's guaranteed for the life of the building!*

For further information consult with the Armorply Chalkboard Division of the United States Plywood Corporation, or mail coupon.

*TRADE MARK

†FACES BY THE BETTINGER CORP., WALTHAM, MASS.

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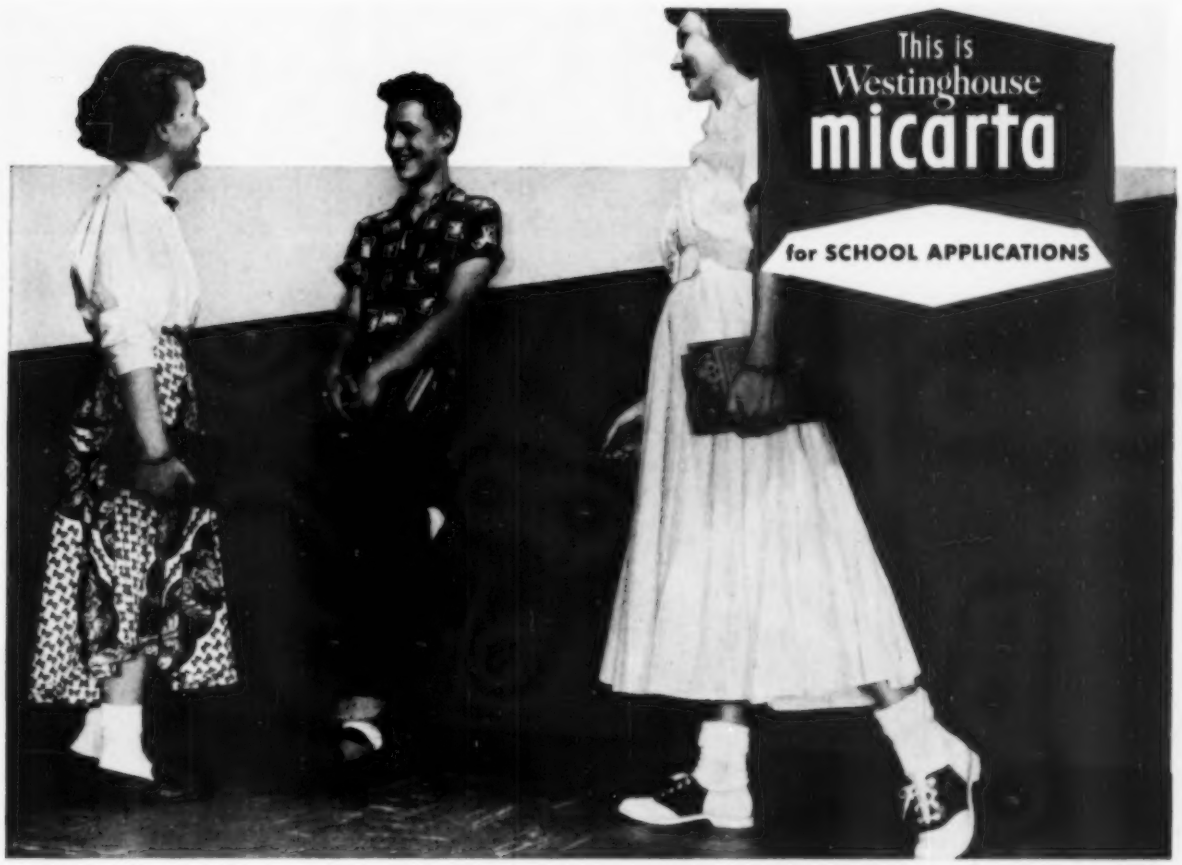

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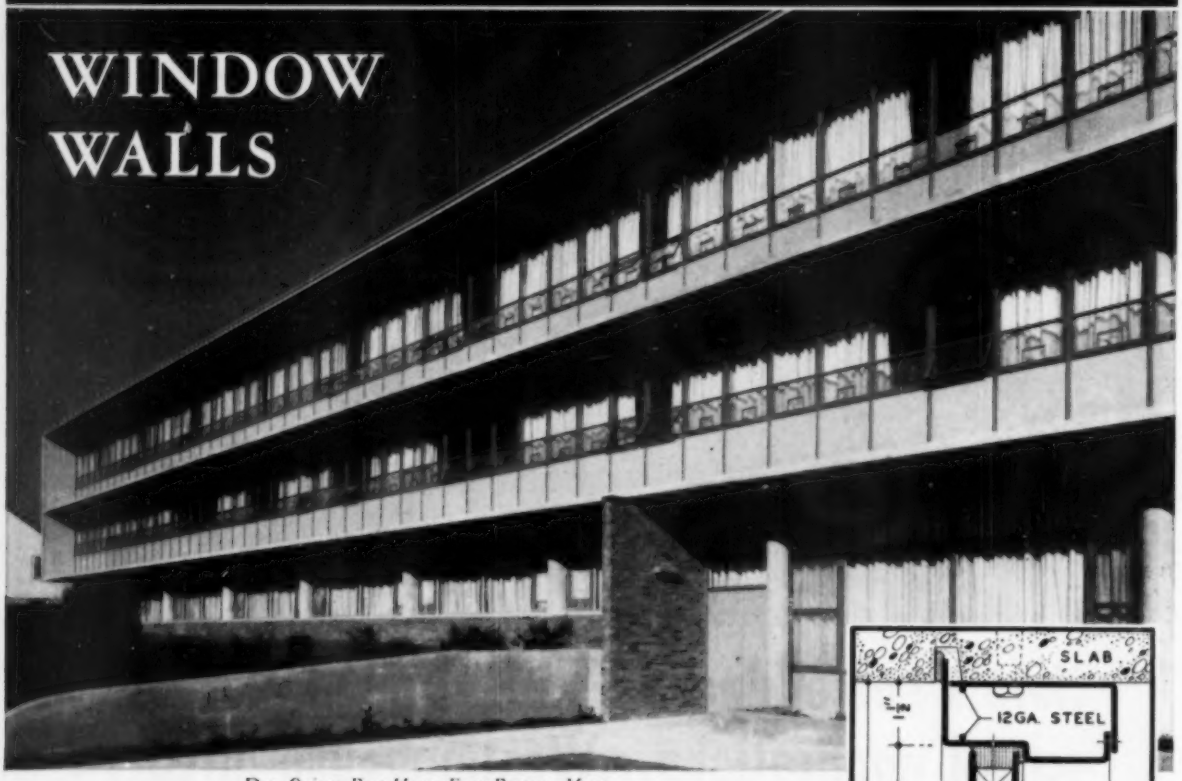
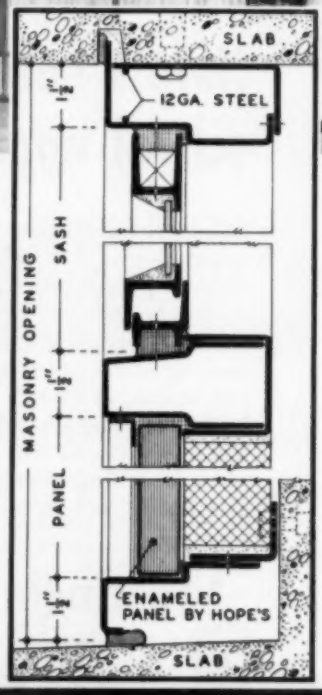


Don Orione Rest Home East Boston, Mass.

Coletti Bros. Architects — *Mozzicato Construction Co., Contractor*

Over the years, as architects have incorporated more and larger glass areas in their designs, Hope's engineers have assisted by pioneering Steel Window Walls of outstanding strength, rigidity and durability. They adapt to any architectural plan, they can accommodate any desired ventilator arrangement and they complement the facade. At right are Hope's construction details used in this modern rest home.



Here's a Partial List of Hope's Steel Window Wall Installations:

1947 — Science and Pharmacy Bldgs., Drake University, Des Moines, Ia. Saarinen, Swanson and Saarinen, Arch'ts, Brooks-Borg, Associates . . . *1950* — Senior High School, East Providence, R. I. Charles A. Maguire and Associates, Arch'ts . . . *1951* — John Thompson Dorrance Lab., M. I. T. Cambridge, Mass. Anderson and Beckwith, Arch'ts . . . *1952* — Douglass Elementary School, Kansas City, Mo. Kivett and Myers, Arch'ts; Angus McCallum, Associate . . . *1953* — Elementary School, 42nd St. & Proctor Ave., Waco, Tex. Walter A. Cocke, Jr. & Co., Arch'ts . . . *1954* — Senior High School, Anaconda, Mont., Fox and Ballas, Arch'ts and Eng'rs.

Write for Catalog 134AP

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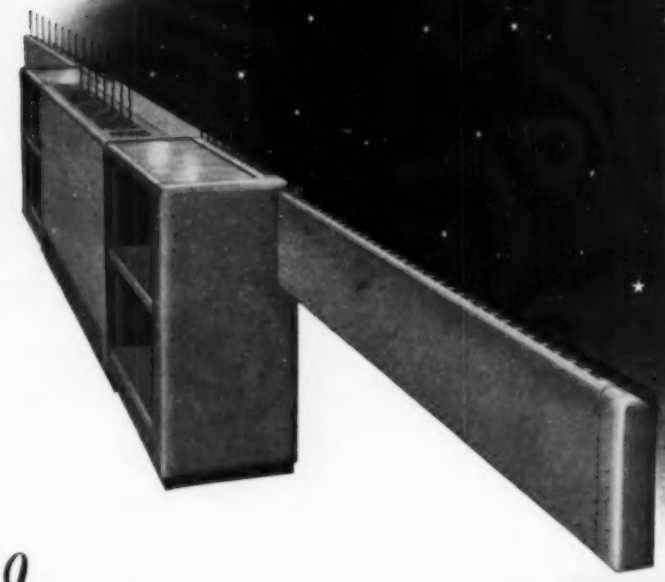

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IT IS generally agreed that classroom temperatures should be maintained at about 55° overnight and during periods of shut-down in cold weather. This permits quick recovery to comfort conditions and more stable control during the first hours of the next school day.

Cutting off the heat altogether, and letting the classroom temperature drop to 40° or 45°, makes the recovery difficult—particularly in restoring heat to the floor slab, walls, desks, etc.—and leads to morning room-temperature fluctuations, possible overheating, and abnormal bodily heat losses to surrounding objects.

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Get more for your school building dollar . . . go NESBITT.

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Added controls operate unit fans periodically through the night.

Convector provides supplementary heat, but is not used during day.

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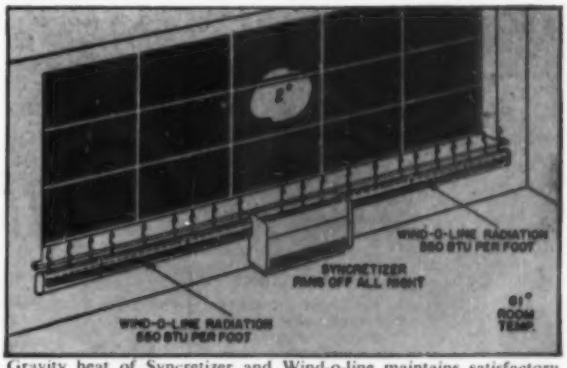

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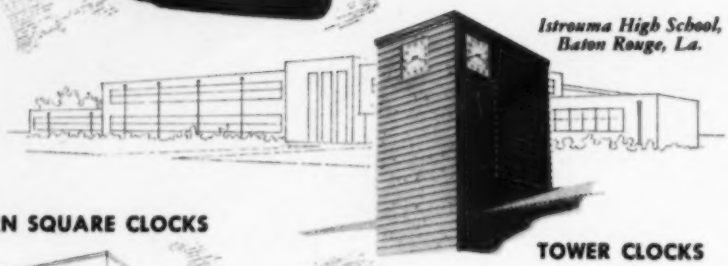

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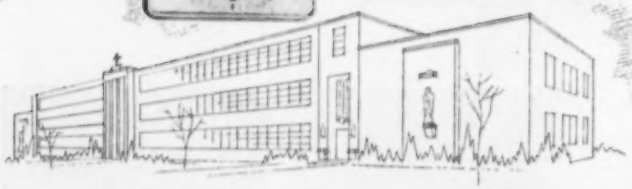
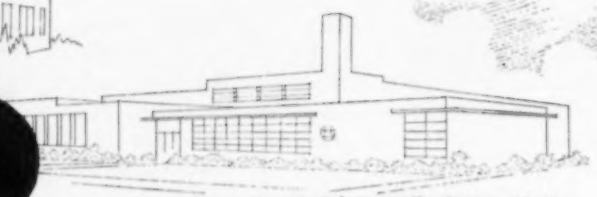


St. Joseph High School, Cleveland, O.

PROGRAM SIGNALS



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The plumber who knows the advantages of Streamline copper tube and fittings is the man to call in for supply and drainage plumbing in the houses you design and build. For Streamline copper plumbing makes an efficient, neat and attractive installation that stays tight and leakproof, rust-free, clog-free and completely dependable for years to come. Prospective home owners prefer it . . . even insist on it because they know that an all-copper system will give them trouble-free service and last as long as the house they buy.

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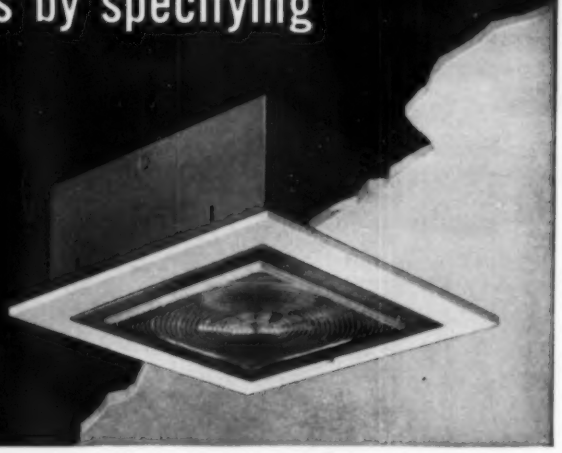

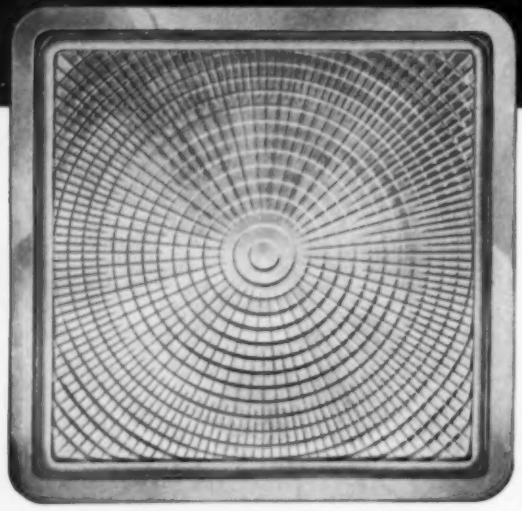

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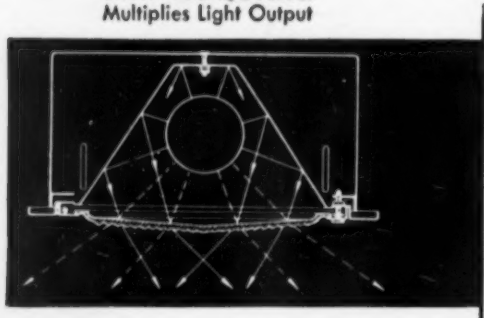
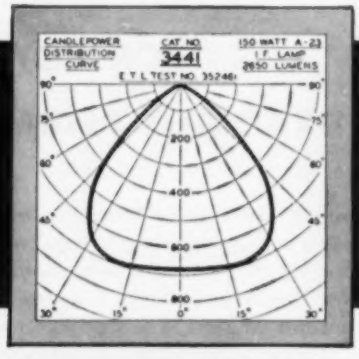


Eliptisquare reflector redirects *all* box-enclosed light downward through AMCOLENS to multiply lamp light utilization.



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HILLYARD Products for	SPECIFY	FEATURE-ADVANTAGES
GYMNASIUMS (Maple - oak - pecan) Old gyms that require removal of old finish.	2 coats TROPHY SEAL 1 coat TROPHY FINISH (In maintenance suggest SUPER HIL-TONE non-oily dressing—adsorbs dust, increases gloss and natural beauty.) KURL-OFF non-inflammable paint-varnish remover.	A lighter, tougher finish for better reflectivity. Non-skid! No-glare! Gives double the life of any gym treatment on the market. Safely dissolves old finish for easy scrape off. Eliminates sanding which saves 10 years wear for floor. Finishes to light tone gloss with greater depth of beauty.
WOOD FLOORS (Seal and Wax Treatment)	1 coat WOOD PRIMER 2 coats SUPER HIL-BRITE WAX● (In maintenance suggest HIL-SWEEP, non-oily. Will not soften wax film.)	An in-the-grain seal that fuses and hardens cells, acts as waterproof base for wax finish. A self-polishing, high grade Carnauba wax with built-in resistance to slipping, water, traffic wear. Eliminates frequent re-strippings and re-waxings. Cuts waxing costs ⅓rd.
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WHITE CEMENT AND TERRAZZO	1 coat TERRAZZINE 2 coats WHITE ONEX-SEAL (In cleaning suggest ONEXITE, a neutral chemical cleaner with white pigments added.)	(See●● above) Cement and Terrazzo A specially formulated seal and finish to keep white floors white. Adds light reflection. No waxing! No yellowing!
RESILIENT FLOORS (Asphalt - rubber - linoleum)	1 coat HIL-TEX 2 coats SUPER HIL-BRITE WAX (In maintenance suggest HIL-SWEEP, re-searched especially for resilient floors. Leaves no oily residue to darken, discolor, soften or bleed colors.)	Highly resistant to grease, oil, soap and waxes. Seals pits and pores, providing an unbroken surface permitting subsequent wax coat to develop a higher lustre. (See● above)

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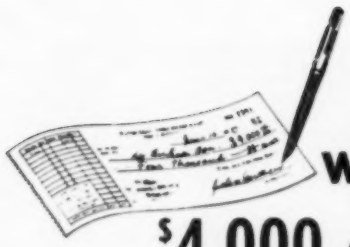

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You can enjoy the benefits of the *finest* lighting money can buy and effect really substantial savings at the same time, simply by buying the *right* lighting fixture. Time and again, the better design and efficiency of Smithcraft Fluorescent Fixtures result in *fewer units* to produce recommended lighting levels.

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Before re-lighting, a complete survey was made and exact lighting requirements were established. To meet these requirements, Smithcraft units and units of several nationally-known top quality manufacturers were subjected to an exhaustive *comparative* analysis. Here are the results:

10% *FEWER UNITS REQUIRED*

Number of units required to achieve recommended lighting levels: ..... Smithcraft — **270**
2nd Best Fixture — 297
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10% *LESS INSTALLATION COST*

Proportionately less labor and materials were required to install the 270 Smithcraft units than the 297 units of the nearest competitor.

10% *FEWER LAMPS*
(Initial & Replacement)

Lamps required: ..... Smithcraft — **706**
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Recommended practice is to replace lamps every 18 months—a continuing 10% savings.

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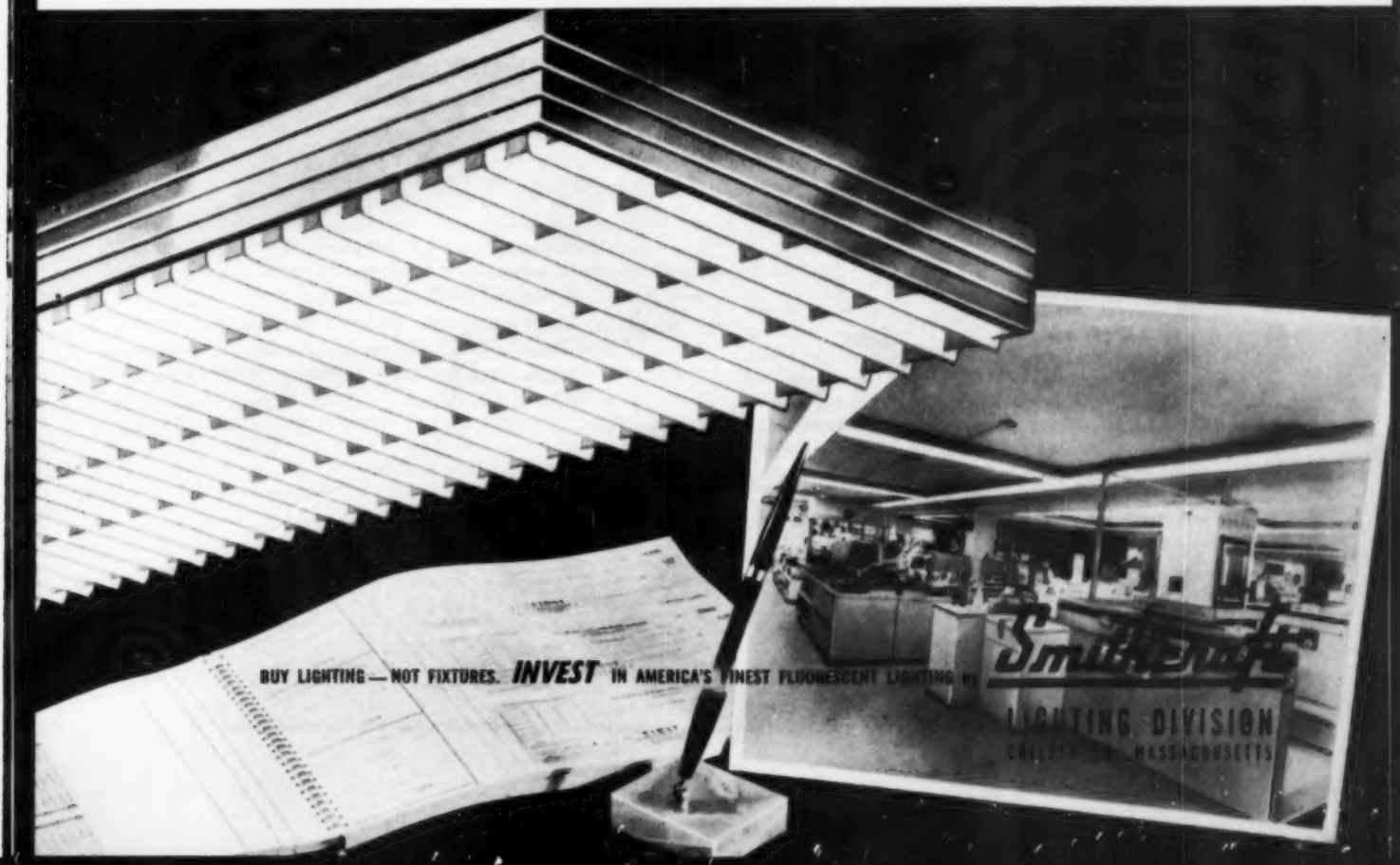
2nd Best Fixture: 56.3 kilowatts
3rd Best Fixture: 64.8 kilowatts

Whether you're lighting a store, office, school, factory, or institution, it pays to *buy lighting — not fixtures.* Invest in Smithcraft — America's Finest Fluorescent Lighting Equipment.

PHOTOGRAPH SHOWS AN INTERESTING PATTERN ARRANGEMENT OF THE SMITHCRAFT LOUVERLITE SLIMLINE IN THE PENNA. DEPT. STORE DESCRIBED ABOVE.



Mayo Clinic Diagnostic Building, Rochester, Minn.
Architects: Ellerbe & Company, St. Paul and Rochester, Minn.
General Contractor: O. A. Stocke & Company, Inc., Rochester, Minn.

QUIET: Good for what "ails" a Clinic

When Mayo Clinic, Rochester, Minn., chose Acousti-Celotex tile to sound-condition its beautiful new Diagnostic Building—it hit upon the most economical, attractive, lowest-cost way possible.

For here was an example-in-use of efficient materials with high sound-absorption value . . . *plus* quick and easy installation, and minimum maintenance . . . *plus* magnetic eye-appeal that blended harmoniously with the established decor.

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In the total 187,175 square feet of acoustical treatment given the Diagnostic Building, a variety of Acousti-Celotex tile types were utilized to meet specific needs. Where frequent cleaning was an important factor, Acousteel was installed. To answer the essential purpose of *washability* and *paintability* . . . Acousti-Celotex Perforated Mineral Fiber Tile. And Celotone®, an incombustible fiber tile with rich, deep, sculptured effect, proved the ideal solution in every instance requiring smart decoration. All tile is white, except for areas such as the beautiful elevator lobby pictured above. This was spray-painted green.

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Angus McCallum, A.I.A. Associate
Kansas City, Mo.

Panel Fabricator: Barrows Porcelain Enamel Co.
Cincinnati, Ohio

General Contractor: Frank Quinlan Construction Co.
Kansas City, Mo.

Light-weight, waterproof FOAMGLAS proved ideal insulation for curtain wall panels at Douglass Elementary School, Kansas City, Missouri

Light-weight and waterproof, FOAMGLAS proved to be the ideal insulation for prefabricated curtain wall panels used on the new Douglass Elementary School, Kansas City, Missouri. This unique cellular glass insulation used as the core of porcelain faced panels for the new School, has been a major factor in making them a success.

The Douglass School panels were designed to secure ideal performance in non-load bearing curtain wall construction. They had to be light, rigid and weather-proof, with consistently good insulating qualities. They had to be free from possible deterioration and the formation of moisture traps. They must also be fireproof, vermin-proof and require little maintenance. FOAMGLAS is the only insulation that meets all these requirements. Here's why:

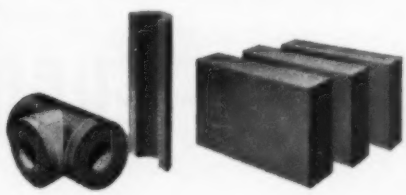
Since the sealed glass cells of FOAMGLAS are impervious to moisture, its insulating performance is consistent and long-lasting . . . reducing costly maintenance and replacement. In addition, this unusual insulation is light, yet strong and rigid. It is fireproof, vermin-proof and acid-proof.

You, too, are sure to find that FOAMGLAS is the ideal insulation for panel or other construction. Let us send you a sample and complete information on how you can best use FOAMGLAS to meet your insulating needs. Write today telling us the use you have in mind.

PITTSBURGH CORNING CORPORATION
Dept. AB-104, One Gateway Center • Pittsburgh 22, Pa.

FOAMGLAS®

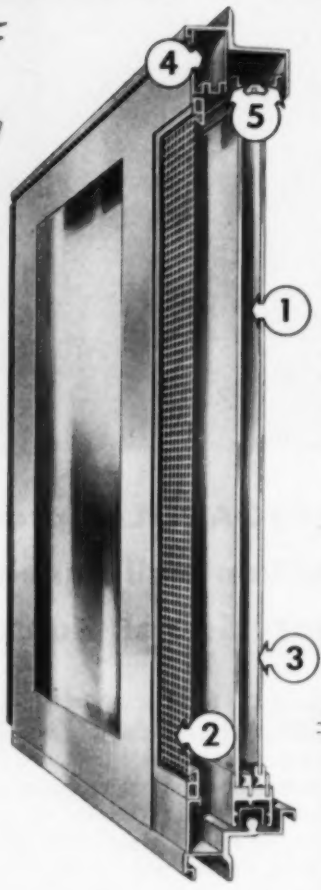
the cellular, stay-dry insulation



Pittsburgh Corning also makes PC Glass Blocks

PETERSON *HORIZONTAL SLIDING* ALUMINUM WINDOWS

The Windows That Have Won The Women!



Whether intuition, or an innate sense of practical value is responsible, more and more women are insisting on Peterson windows for their new homes. So are firms erecting business buildings.

You will indicate clearly that you are abreast of this trend if you recommend Peterson windows for your clients. They're designed to contribute *the most* in the way of appearance, comfort and convenience to new structures. The contribution they make is a lasting one—insuring highest continuing value through the years.

WHY WOMEN FAVOR PETERSON WINDOWS

Make window washing a lark. Sash (1) lifts up and out into room for quick, easy cleaning.

Save wear and tear on husbands. Non-rusting aluminum screens (2) never require painting or removal. Storms (3) stay up, too, are self-storing all year 'round.

Sturdy, hollow-type aluminum framing (4) bespeaks strength, security, permanence, so important to a woman's peace of mind.

Hi-pile water-and-wear-resistant weather stripping (5) prevents window rattle, provides the draft free comfort which women cherish.

Thousands of Installations *from Coast to Coast . . .*

Peterson Windows have a proven record of satisfaction in Hotels, Motels, Churches, Schools, Dormitories, Offices, Hospitals, Clinics, and other monumental and commercial buildings.

PETERSON HORIZONTAL SLIDING ALUMINUM WINDOWS

- ***ROLL OPEN***—With effortless horizontal operation on grease-packed, dust-proof ball bearings
- ***APPEAL ARCHITECTURALLY***—Enhance all design motifs
- ***SAVE MAINTENANCE DOLLARS***—Require no paint; won't rust, swell, warp, stick or rot
- ***INCORPORATE ADVANCED DESIGN***—Eliminate putty, sash balances, cranks, projecting hinges
- ***CLEAN EASILY***—Sliding sash removes into room for easy washing
- ***LOCK SAFELY***—Positive locking in closed, one, two and three inch open positions
- ***EXCLUDE WEATHER***—Hi-pile, water-and-wear-resistant weather stripping cuts heating and air conditioning costs
- ***COME COMPLETE***—Built-in storms and screens with balanced sight lines.

50 STANDARD SIZES

All designs and sizes popularly specified for residential, commercial and monumental building supplied promptly.

Standard windows up to 6 feet high by 10 feet wide are available. Special sizes can be obtained at only slightly higher cost.

Constructed of sturdy aluminum extrusions—63S-T5 Alloy, minimum thickness .062"—engineered for maximum strength.

SEE 16a/Pe IN SWEET'S CATALOG or WRITE FOR COMPLETE DETAILS.

A limited number of exclusive dealerships with protected territories are available. Peterson Window Corporation invites inquiries from reputable dealers.

PETERSON WINDOW CORPORATION

1385 E. Eight Mile Road • Ferndale 20, Michigan

use
CRUCIBLE STAINLESS
for
lower overhead

Say good-bye forever to heavy maintenance costs when you specify Crucible Rezistal® stainless steel for such vital building components as roofing . . . gutters . . . downspouts . . . ductwork.

For Crucible stainless is so resistant to corrosion that even heavy industrial atmospheres leave it virtually untouched. Its high reflective qualities help keep temperatures comfortable during hot weather. Moreover, since stainless is so strong and tough, light-weight sections do a man-sized job – thereby saving you money both in metal and labor costs.

Of course, Crucible stainless steel is easy to work with – to bend, solder and weld . . . to form or machine. That's why it's used more and more wherever there's a need for a strong, hard, tough, corrosion-resisting metal. Let Crucible help you, too, decide which of the many grades of stainless will do your job best. For fast, helpful information – *call Crucible.*

54 years of Fine steelmaking

CRUCIBLE first name in special purpose steels

STAINLESS STEELS

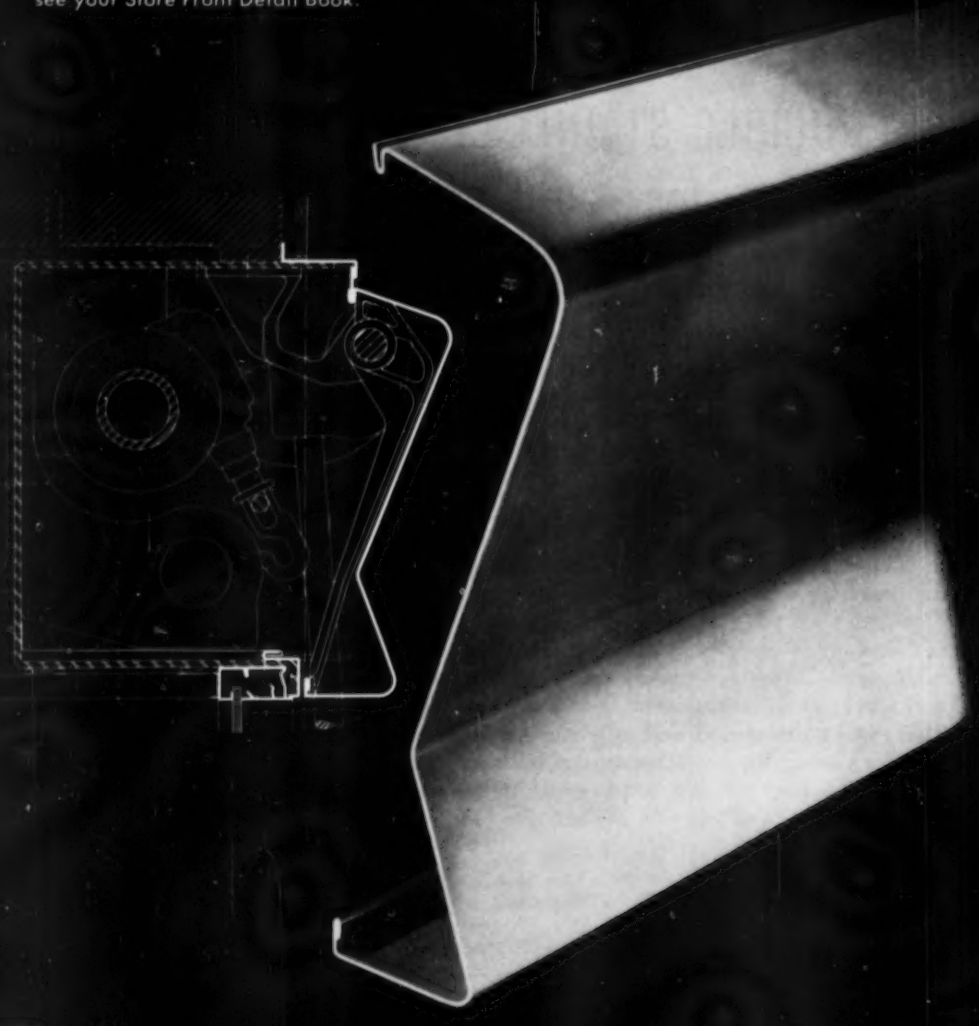
CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.

REZISTAL STAINLESS • REX HIGH SPEED • TOOL • ALLOY • MAX-EL • SPECIAL PURPOSE STEELS

Canadian Distributor — Railway & Power Engineering Corp., Ltd.

New Pittco NO. 90 Awning Bar

. . . combines beauty and function. The photograph shows how the profile creates a pleasing balance of light and shadow. The Pittco No. 90 Awning Bar will give added character to a store front, window or entrance. Factory or field fabricated. For complete information, see your Store Front Detail Book.

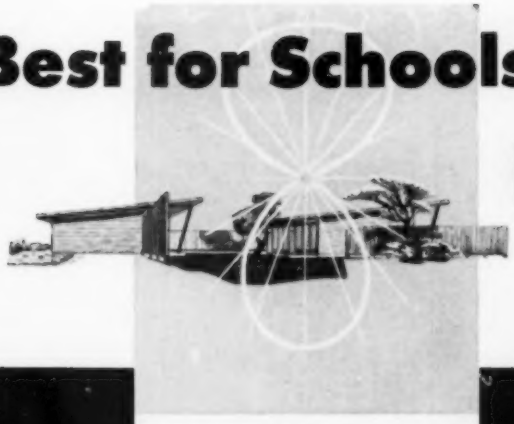


PAINTS · GLASS · CHEMICALS · BRUSHES · PLASTICS · FIBER GLASS

PITTSBURGH PLATE GLASS COMPANY

IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED

Best for Schools glare-free fluorescent...nearest to daylight

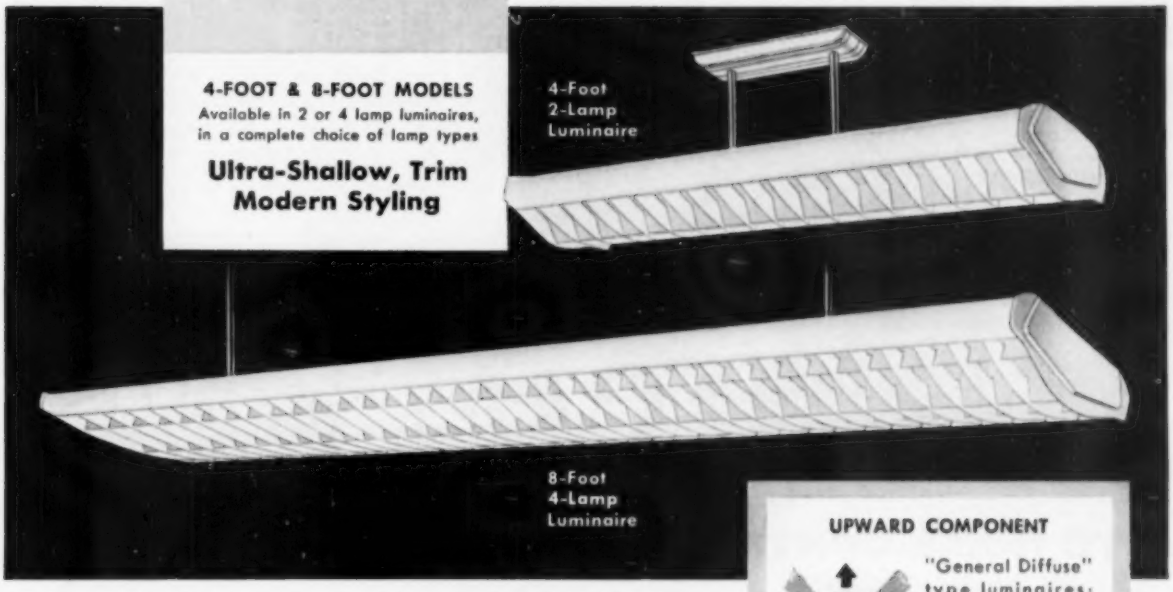


MITCHELL *LODESTAR*

featuring
TRANSLUCENT SIDES
and
35°/25° SHIELDING*

4-FOOT & 8-FOOT MODELS
Available in 2 or 4 lamp luminaires, in a complete choice of lamp types

Ultra-Shallow, Trim Modern Styling



UPWARD COMPONENT

"General Diffuse" type luminaires; approximately half the light goes up to be reflected from ceiling or upper walls for comfortable, glare-free, uniform lighting.

SEMI-TRANSLUCENT SIDES

Provides low brightness contrast, creating modern streamlined appearance. Plastic sides and louver are one easy-to-handle unit.

modern lighting planned for today's schools—superior illumination with low cost maintenance

MITCHELL engineering perfects a new standard for school lighting. The "LODESTAR" Luminaire offers abundant light distribution with an absence of glare to approximate daylight conditions. This important lighting advance is attained by the substantial upward component with its "general diffuse" lighting effect, the semi-translucent side panels with pleasing low brightness contrast, and the superior louver design (35°/25°* cutoff) which delivers properly shielded illumination to working areas. Smooth styling, very low maintenance factor and surprisingly low cost make the MITCHELL "LODESTAR" Luminaires the wisest choice for School Lighting.

*Also available with 35°/45° shielding.

where quality counts **SPECIFY**

MITCHELL

MITCHELL MANUFACTURING COMPANY
2525 N. Clybourn Ave., Chicago 14, Illinois
In Canada: Mitchell Mfg. Co., Ltd., 19 Waterman, Toronto

Mitchell Manufacturing Company, Dept. 5-K
2525 N. Clybourn Ave., Chicago 14, Illinois

Send full data on MITCHELL "Lodestar" Luminaires.

Name.....

Firm.....

Address.....

City.....Zone...State.....

The Johns-Manville Permacoustic Ceiling in the beautiful Bradley Airport Terminal restaurant provides quiet and comfort despite noisy aircraft traffic outside.

A beautiful Solution

TO NOISE-CONTROL PROBLEMS...

Johns-Manville Permacoustic

decorative acoustical tile

Specify J-M Permacoustic® tile for ceilings that provide unusual architectural beauty with maximum acoustical efficiency and fire safety.

Johns-Manville Permacoustic is exceptionally sound-absorbent. It is attractive and noncombustible. It is available with either a textured or fissured surface. These random-textured finishes increase its noise-reduction qualities and provide design and decorative interest.

Made of baked rock wool fibres, Permacoustic is fireproof—*meets all building code fire-safety requirements.* Johns-Manville Permacoustic is easy to install on existing ceilings or slabs, or by suspension using a spline system of erection.

Send for your free copy of the new brochure about Permacoustic tile. Write Johns-Manville, Box 158, New York 16, New York. In Canada, write 199 Bay St., Toronto 1, Ontario.

INFORMATIONAL DATA ON PERMACOUSTIC

Sizes 12" x 12" 12" x 24" — Thickness ¾" * — Color: white

	ACOUSTICAL EFFICIENCY Test No. A51-98	Test No. A51-99
cycles per second	cemented to plaster board (mounting No. 1)	mechanically mounted on special metal supports (mounting No. 7)
125	.04	.56
250	.21	.53
500	.75	.60
1000	.88	.73
2000	.85	.88
4000	.78	.88
noise reduction coefficient	.65	.70
weight per sq. ft.	1.3	1.3

*Also available in ⅞" thickness

JOHNS MANVILLE PRODUCTS **Johns-Manville**

40 YEARS OF LEADERSHIP IN THE MANUFACTURE OF ACOUSTICAL MATERIALS

Modern Construction calls for

MASONITE

PEG-BOARD* PANELS

"Working Walls" bring better, neater, safer storage!

Closets that multiply storage capacity! Garages that are easy to keep clean and orderly! Workshops organized for true efficiency! Kitchens where everyday items are always handy!

That's part of the magic of Masonite Peg-Board panels and fixtures. There's more magic, too, in the living room, for a woman can arrange and re-arrange her decorative objects at will...with a twist of the wrist. Interchangeable metal hangers (more than 60 varieties) lock on, lift off without tools.

Don't hesitate to specify these grainless, all wood hardboard panels with their hundreds of clean perforations. They're as easy to buy as a 2 x 4. Write for complete information or refer to Sweet's File Surfacing and Paneling 13b.
MAS

*T. M. Reg. U. S. Pat. Off. B. B. Butler Mfg. Co., Inc.

PRESDWOOD WOOD MADE BETTER

NATURALLY STRONGER WITH LIGNIN

MASONITE® CORPORATION

Dept. PA-10, Box 777, Chicago 90, Ill.

"Masonite" signifies that Masonite Corporation is the source of the product

"A salute to those who made it possible" *

Read what architect C. E. Hamilton says about school acoustical treatment

The following comments are taken from a letter that Architect C. E. Hamilton of Hamilton & Graham, Muncie, Indiana, wrote to another architect:

"We have completed two schools and have one under construction using Fenestra* Acoustical D Panels and we are glad to pass on our reactions and the comments of teachers and custodians.

"First, we believe this product is economical as it serves as a roof or floor framing unit and a finished ceiling. It is an acoustical unit which is absorbing not less than 70 per cent of sound vibrations.

"Its welded assembly is a rigid area and, with the ¾-inch fiber glass roof insulation over and the sound absorption material in the cells, gives low heat loss, and to date after two winter seasons there is no movement from expansion or contraction.

"We have applied two coats of paint to the factory primed surface and have had no bleeding. The custodian in one building has washed the ceilings and stated it to be the easiest surface to keep clean.

"Teachers in all rooms have nothing but compliments for the quietness of the room."

Now here is an excerpt from an *Architectural Forum* magazine article describing the use of Fenestra Acoustical Building Panels in Central High School, Kenosha, Wisconsin:

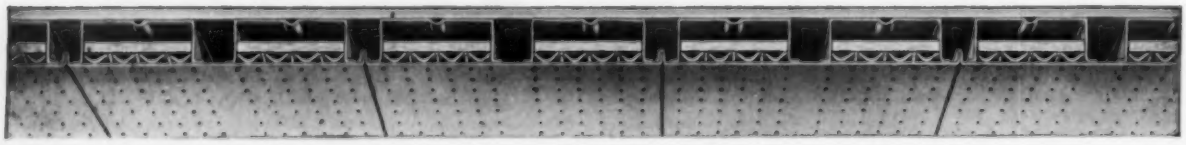
"This material saved 59¢ per sq. ft., or $26,000 in all. It was erected in only ten working days, replaced separate roof deck and framing and eliminated acoustical ceilings and plastering."

Write for full details: Detroit Steel Products Company, Dept. PA-10, 3409 Griffin Street,, Detroit 11, Michigan.

*Trademark

* Your need for a maintenance-free, noncombustible, built-in acoustical treatment encouraged us to develop Fenestra Acoustical-Structural Building Panels — a great advancement in building products.

Fenestra | METAL BUILDING PANELS



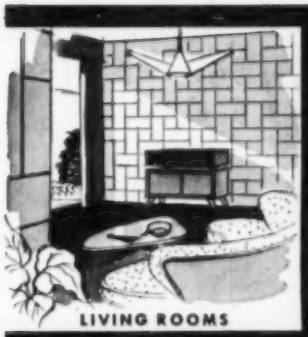
→ A complete acoustical treatment

→ A decorative interior finish

→ An insulative structural wall

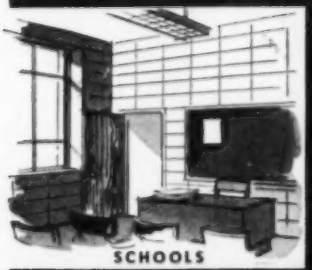
All at one low cost!

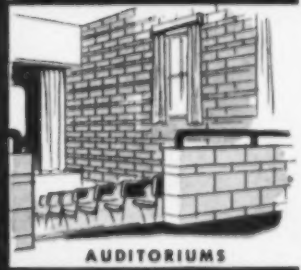
GYMNASIUMS


LIVING ROOMS

CHURCHES*

HOTEL LOBBIES


SCHOOLS


AUDITORIUMS

RESTAURANTS

SHOPS

*Diamond Lake Lutheran Church, Minneapolis; H. C. Hauser, Architect, Milwaukee

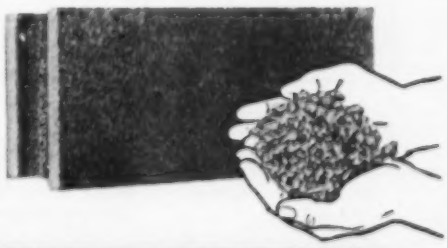
The great and growing popularity of Waylite Masonry structures is due to the combination of its several desirable qualities.

It *is* masonry. With all of masonry's desirable qualities . . . substantial . . . time- and fire-resistant . . . architecturally accepted throughout man's entire history.

But at this point the masonry characteristics of Waylite diverge. In Waylite Masonry, walls have a high thermal insulative quality that gives equitable room climate. The exposed surface of the units eliminates need for acoustical treatment. Decorative effect is easily achieved with varying sizes of units, laid in patterns; joint treatments; texture; colors. (See 24 pp. in Sweet's)

The low cost of Waylite Masonry comes in part from exclusive features of the raw aggregate material and large volume processing economies; and also in part from modern high-speed machinery and methods in the products plant.

Complete engineering and designing data is available. Address the Waylite Company, 105 W. Madison St., Chicago, or Box 30, Bethlehem, Pa.



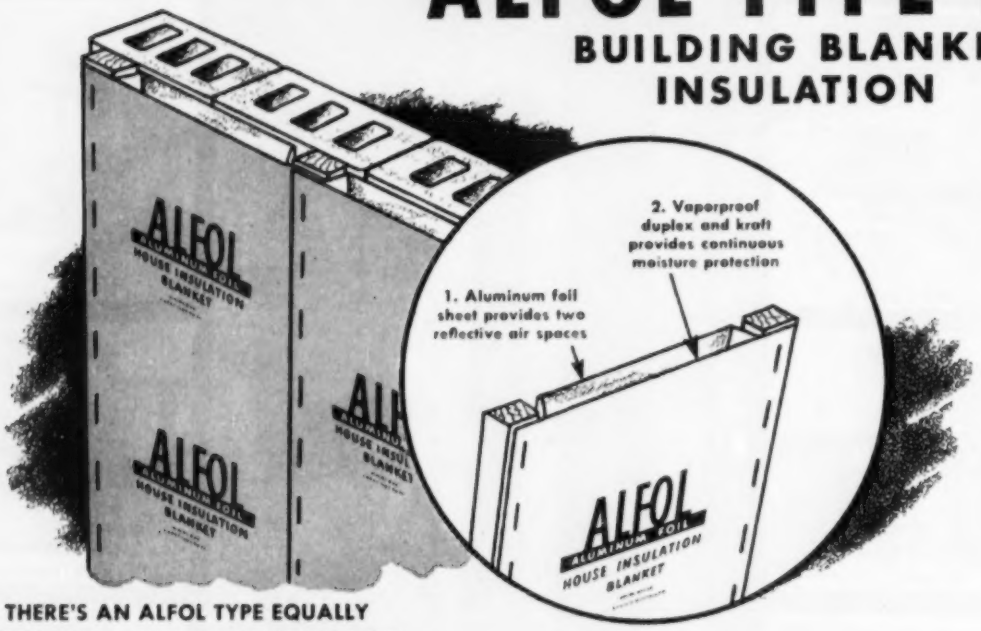
WAYLITE

MASONRY UNITS

Over an inch of Insulating Efficiency plus a positive vapor barrier—all in the 7/8 inch space of a furred out Masonry Wall!

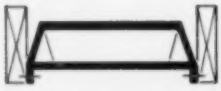
ALFOL TYPE 1A

BUILDING BLANKET INSULATION


ALFOL
ALUMINUM FOIL
HOUSE INSULATION
BLANKET
2. Vaporproof duplex and kraft provides continuous moisture protection
1. Aluminum foil sheet provides two reflective air spaces

THERE'S AN ALFOL TYPE EQUALLY EFFICIENT FOR EVERY INSULATION NEED

ALFOL Type IV—Four reflective air spaces for the utmost in thermal efficiency.



ALFOL Type III—Three reflective air spaces—ideal for crawl spaces, unfinished ceilings.

ALFOL Type II—Three reflective air spaces—designed to be applied across stud *faces*.

ALFOL Type I—Two reflective air spaces—in mild climates at lowest cost and top efficiency.

Alfol Type 1A Insulation is specially made for standard masonry construction. It is the only insulation that provides over an inch of insulation value plus a positive, continuous vapor barrier in the usual 7/8" clearance available in 1" x 2" furred masonry walls. Refurring expense is eliminated!

Type 1A has proved effective in hundreds of installations in every section of the country. When applied the pure aluminum foil automatically "pops out" to form two reflective air spaces equal in thermal value to more than an inch of insulation. The heavy vaporproof duplex and kraft backing by which Alfol is applied across the face of the furring assures a positive, continuous vapor barrier.

Write for free literature and complete details — Address Dept. PA-1

ALFOL
BUILDING BLANKET INSULATION
"FIRST IN REFLECTIVE INSULATION"

REFLECTAL CORPORATION
A Subsidiary of Borg-Warner
155 EAST 44th ST. NEW YORK 17, N. Y.

Sanymetal* ...

* Trade Mark Registered

...uses the ageless and fadeless material

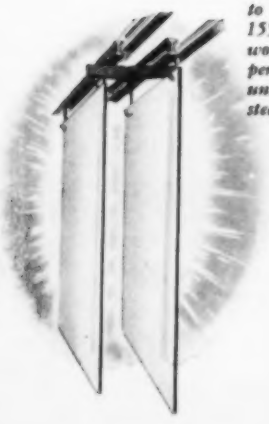
Vitreous Porcelain*

on steel for toilet compartments

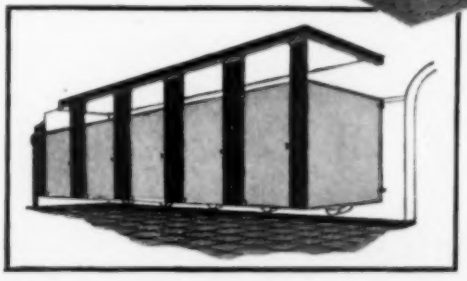
Sanymetal "Porcena" (Vitreous Porcelain on Steel) is a *material*, not merely a finish. It is in every aspect unlike *paint* enamel or lacquer finished steel because it is fused to steel at a temperature of 1350°-1550° F. This impregnates the steel with vitreous porcelain enamel to the extent that it *cannot be hammered out*. Sanymetal "Porcena" (Vitreous Porcelain on Steel) is incomparable with any other material commonly used for toilet compartments. It is a lifetime material that stays new two ways: (1) in appearance; (2) in structure! This newness is the result of a correct combination of the desirable qualities of the hardness of glass and the natural structural strength of steel. Sanymetal was first to utilize vitreous porcelain on steel for toilet compartments. Ask the Sanymetal Representative to demonstrate the unusual and exclusive features of Sanymetal Vitreous Porcelain on Steel Toilet Compartments.

Refer to Sanymetal Catalog No. 91 for complete range of types of compartments and colors.

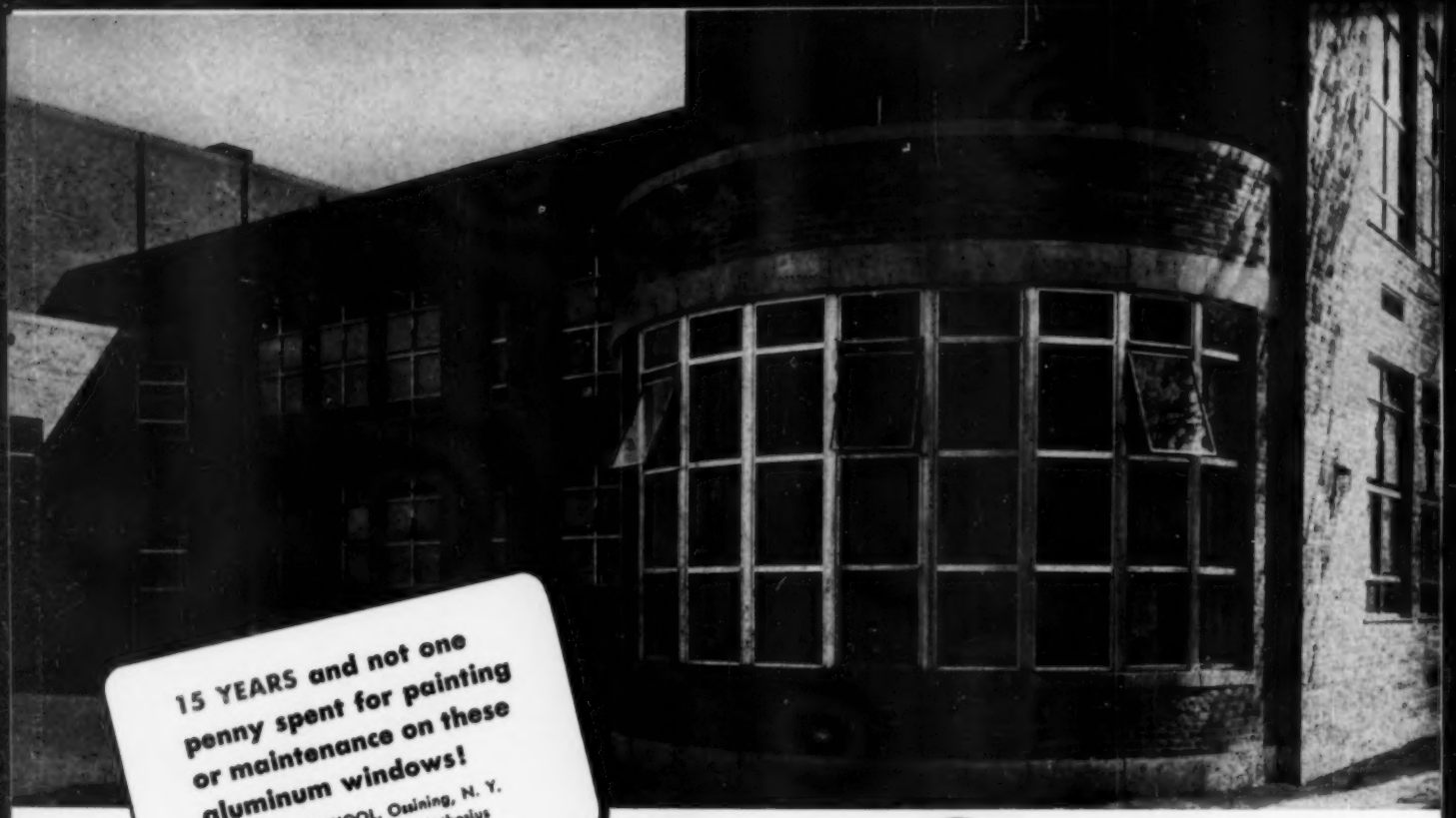
THE SANYMETAL PRODUCTS CO., INC.
1683 Urbana Road, Cleveland 12, Ohio



Vitreous porcelain enamel being fused to steel at a temperature of 1350°-1550° F. Baked-on paint enamel finishes would be totally destroyed by this temperature. Vitreous porcelain on steel is unlike paint enamel or lacquer finished steel in every respect.



Sanymetal Century Type Ceiling Hung Toilet Compartment of Vitreous Porcelain on Steel. There is nothing better—nothing so enduringly modern.



15 YEARS and not one penny spent for painting or maintenance on these aluminum windows!

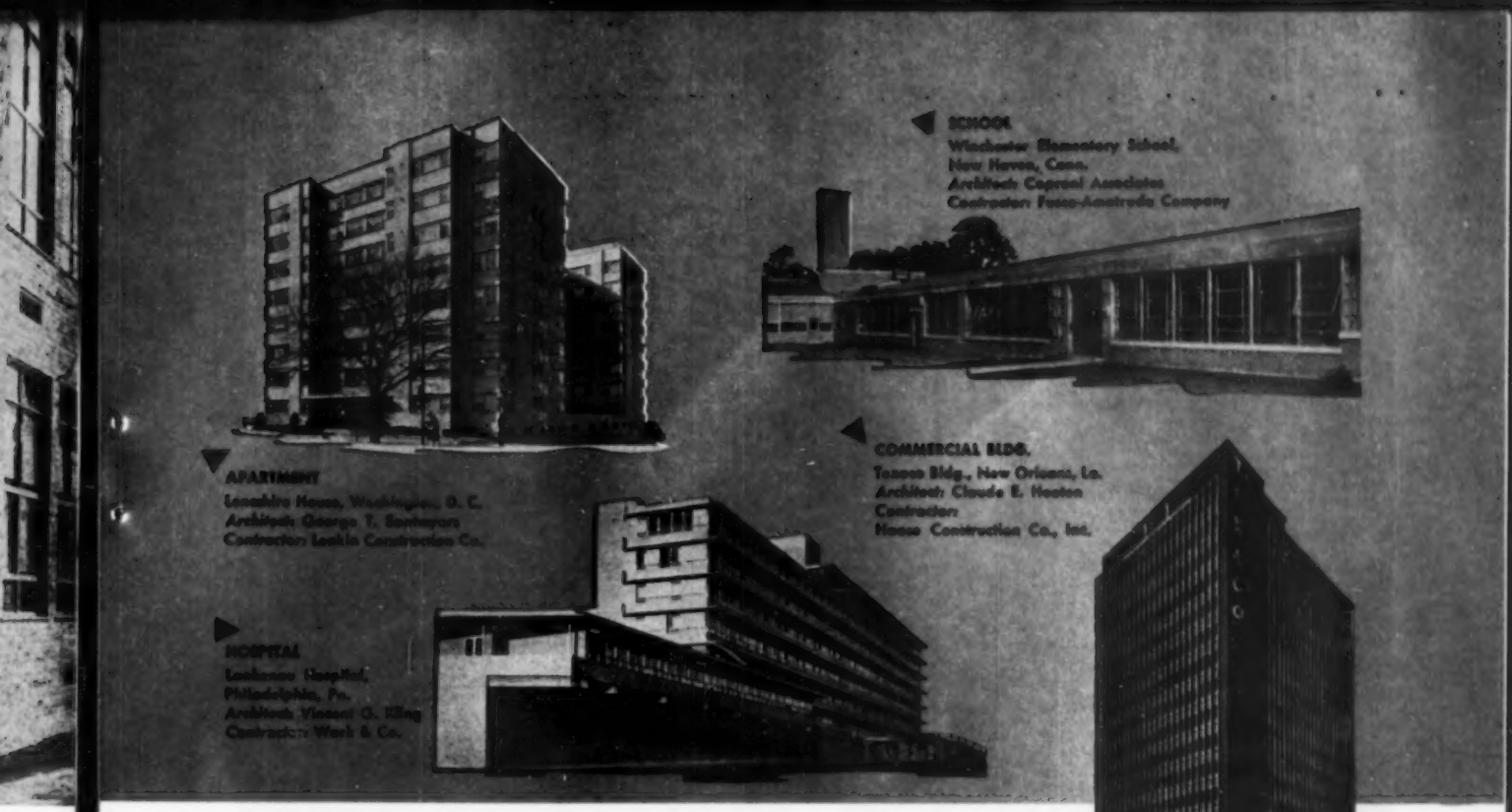
PARK SCHOOL, Ossining, N. Y.
Architect: Frederick Mathesius

HERE'S PROOF YOU CAN STOP NEEDLESS AND WASTEFUL MAINTENANCE EXPENSE

in schools, hospitals, housing, commercial and industrial buildings, by insisting on

Quality Approved

ALUMINUM



EXPERIENCE SHOWS . . . ALUMINUM WINDOWS SAVE MANY DOLLARS ON PAINTING ALONE

YES, Aluminum Windows actually DO SAVE YOU MONEY... They do help keep building maintenance expense at a minimum. Experience in hundreds of schools *(like the one shown on opposite page)*, hospitals, and other types of buildings erected 15 to 25 years ago shows that not one penny was ever required for painting the aluminum windows.

That's why today, more and more architects are specifying "Quality-Approved" aluminum windows for every new building project they design. That, too, is why maintenance-conscious building owners and managers insist on "Quality-Approved" aluminum windows.

Aluminum windows, whether they be double-hung, casement, projected or awning type, are the only practical, reasonably-priced windows that *never* require painting... that cannot rust or rot, warp or swell... that retain their trim, modern-looking appearance for the life of the building.

A WORD OF CAUTION—Remember, that only aluminum is rustproof through and through. Mere surface protection against rust is not enough. Wear, unintentional scratches in delivery or installation may nullify any protective surface coating and soon require painting. "Quality-Approved" aluminum windows are available through many manufacturers in sizes and styles that fit any exterior design treatment. For your protection and full satisfaction, insist on the "Quality-Approved" Seal when you specify or OK specifications.

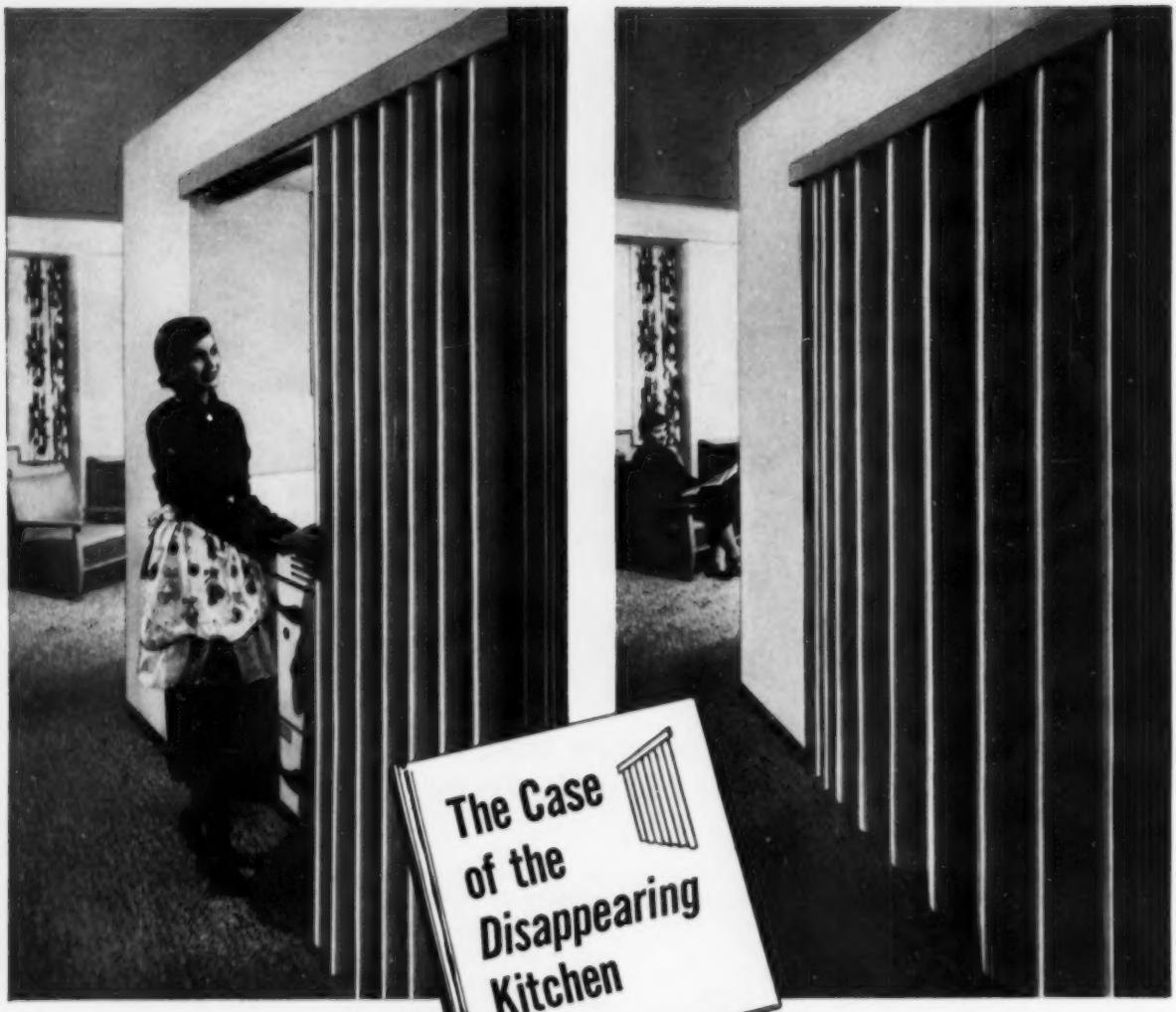
For a copy of our 1954 window specifications book and names of approved manufacturers, consult Sweet's Architectural Catalog (Section 16a/ALU) or write direct to Dept. PA-10.

Aluminum Window Manufacturers Association

74 Trinity Place, New York 6, N. Y.

MEMBERS: Alcasco Products, Inc., Muskegon, Mich. • Aluminum Home Products Co., Knoxville, Tenn. • The Wm. Bayley Co., Springfield, Ohio • Coco Steel Products Corp. (*Sterling Aluminum Window Division*), Chicago, Ill. • Cupples Products Corp., St. Louis, Mo. • Fentron Industries, Inc., Seattle, Wash. Michael Flynn Mfg. Co., Philadelphia, Pa. • General Bronze Corp., Garden City, N. Y. • Hunter Mfg. Corp., Bristol, Pa. • Metal Arts Mfg. Co., Inc., Atlanta, Ga. • Miami Window Corp., Miami, Fla. • Reynolds Metals Co. (*Parts Division*), Louisville, Ky. • J. S. Thorn Co., Philadelphia, Pa. • Timm Industries, Inc., Los Angeles, Calif. • Universal Window Co., Berkeley, Calif. • Ware Laboratories, Inc., Miami, Fla. • Windalume Corp., Kenvil, N. J.

WINDOWS



DINNER TIME... **...OTHER TIMES**

A hideaway kitchen and a slideaway wall in 390 apartments proved an unbeatable combination for the Essex House, Indianapolis, Indiana. Not only did this arrangement save on space and construction costs, but tenants are delighted with the planning.

FOLDOOR was chosen for the job to give the best folding door appearance and performance. Its ability to stack into a minimum of 1½" per foot of opening . . . its choice of handsome quality fabrics, equaled by no other folding door manufacturer . . . and its quiet, smooth folding action were other important factors that determined the selection of FOLDOOR.

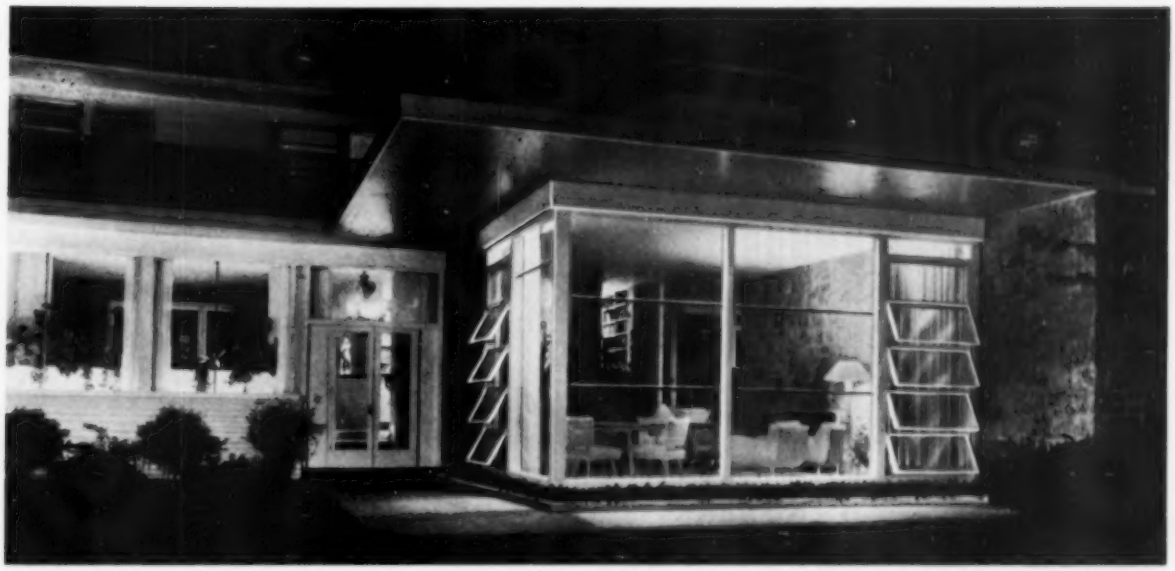
Whenever you build be sure you include FOLDOOR in *your* plans. Whatever you build—institution, office building, church or school—there's a size and type of FOLDOOR to fit your every need and opening. Construction strength and quality are uniform in *all* models—you never have to guess when you specify FOLDOOR for any installation.

• • •

For further information see Sweet's Catalog or consult your nearby FOLDOOR installing distributor. There's one in every principal city.

HOLCOMB & HOKE MFG. CO., INC. • 1545 VAN BUREN ST., INDIANAPOLIS, IND.
IN CANADA: FOLDOOR of Canada, Montreal 26

HOLCOMB & HOKE
FOLDOOR
WITH THE CORNICE ON TOP



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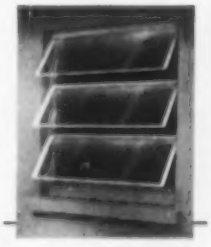

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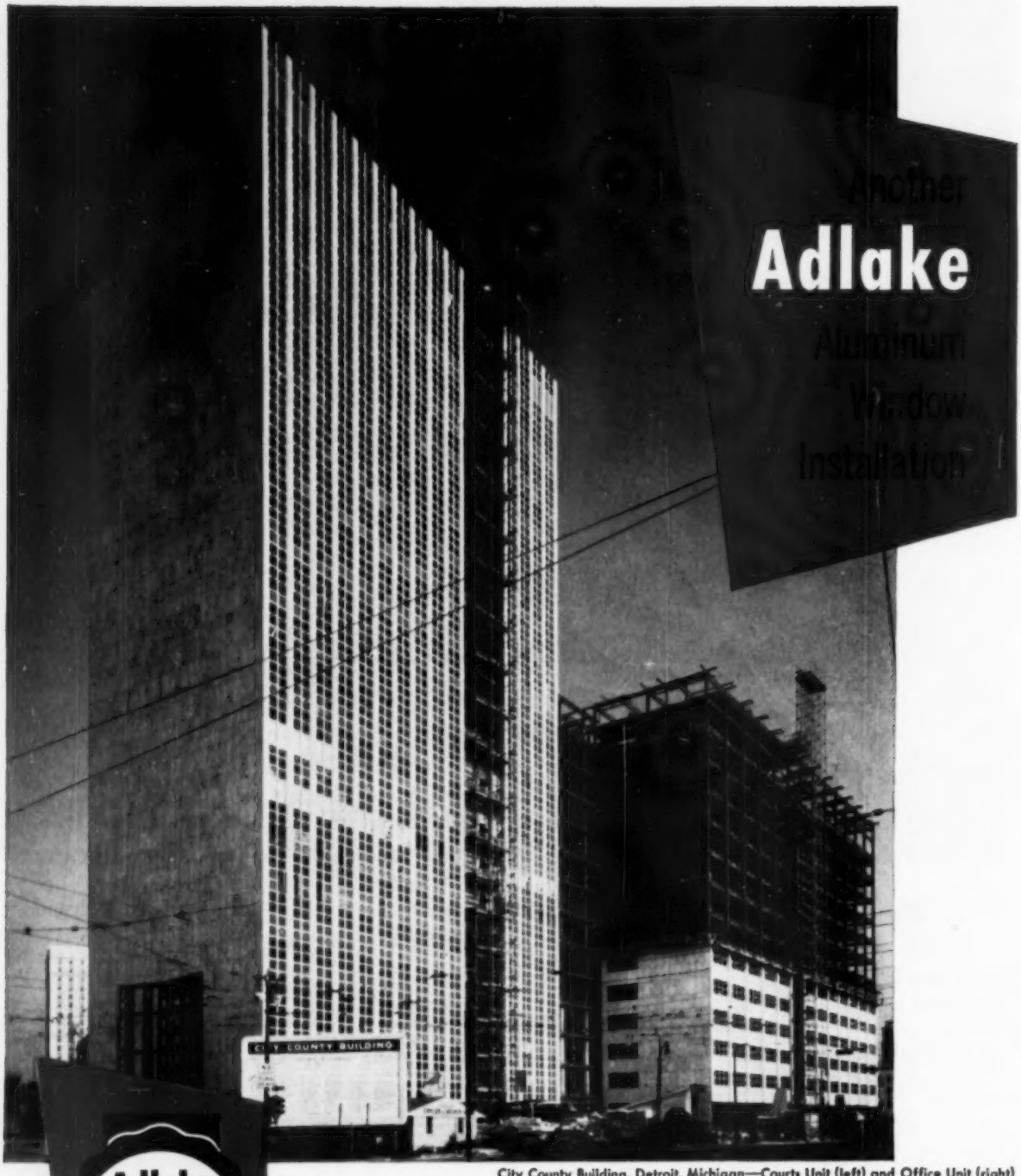

City County Building, Detroit, Michigan—Courts Unit (left) and Office Unit (right)
Harley, Ellington & Day, Architects—Bryant & Detwiler, General Contractors.

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how effective is copyright of plans?

Probably every architect who has produced what he considers an original design has been frustrated and annoyed at the copying of that design by others. Often it happens that the same idea bursts upon the architectural scene from several sources at once—it is a logical development from what has gone before, and cannot be claimed as the exclusive product of any one man's creative genius. Other "ideas" are of such a general nature that they never could be kept as proprietary designs, and soon become common property. (Then we begin classifying them as clichés!) But the fact remains, especially in construction methods and often in the design result of those methods, that an architect or an engineer may develop, over a long period of time, a design of his own which he believes should remain his own; and be used by others only with proper credit, and in some cases proper royalties.

The Copyright Law has not protected the architect too well in this regard. And the architectural profession has not actively worked to find a solution as, for instance, musicians have. A California case at present in the Federal courts may point a way to a solution. P/A believes that it is of sufficient importance to the whole profession to merit discussion, and even support.

The situation is this: The firm of Cliff May & Chris Choate, designers and consultants for low-cost housing (May is well known for his "ranch house" designs; Choate is an architect associated with him) developed what is known as the "Cliff May Home." They have licensed 50 dealers in California, and have distributors in eleven western states and Texas at the present time. The design, May says, "we have worked on for a long period of time, devoting our entire effort to experimenting and research, and have spent large sums of money in drawing, testing, etc. . . ." They feel that "its outward architectural appearance is the result of the system of construction that we have created."

They are now disturbed because, "it is the most copied house in California at the present time," and this, they feel, "tears down the work we have done and depreciates the product we have created."

Cliff May and Chris Choate feel so strongly on the subject of copyright that they have already pressed two cases: they recently won an injunction against a contractor and construction company preventing them from using, duplicating, or disclosing copyrighted plans. A year ago, May settled, by agreement, two cases of infringement of copyright, receiving payment of back fees.

Now the new case: May & Choate and their Ranch Home Supply Corporation are asking $500,000 damages from the defendants—William M. Bray, Los Angeles architect, the Bristol Development Company, the Federated Construction Company, and six individuals—for infringement of copyright plans, specifically in a development known as Bristol Manor; and are seeking from the court an injunction prohibiting the systematic copying of the appearance of the Cliff May house. Photographs of the two houses—the May & Choate "original" and the Bristol Manor house, are shown on the next page.

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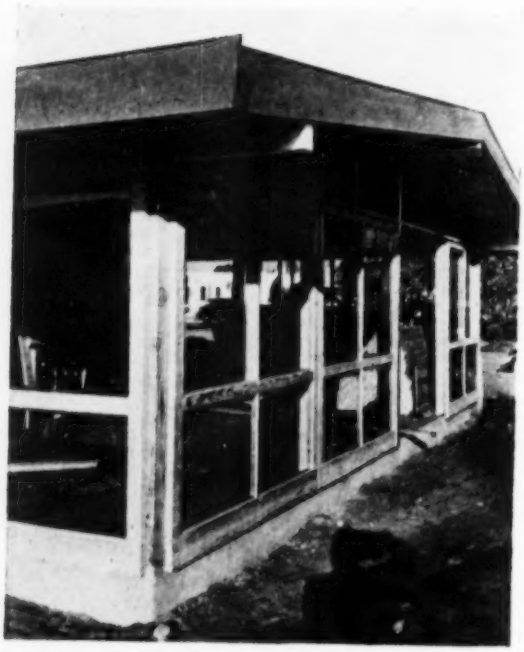
Can architectural plans be effectively copyrighted? Some authorities have said *no*, but Cliff May points out that until Victor Herbert, Frank Buck, and others proved that song writers could have an effective copyright ("with only seven notes to the scale, you can see what a job they did!") and ASCAP was formed, it had seemed impossible in that field also.

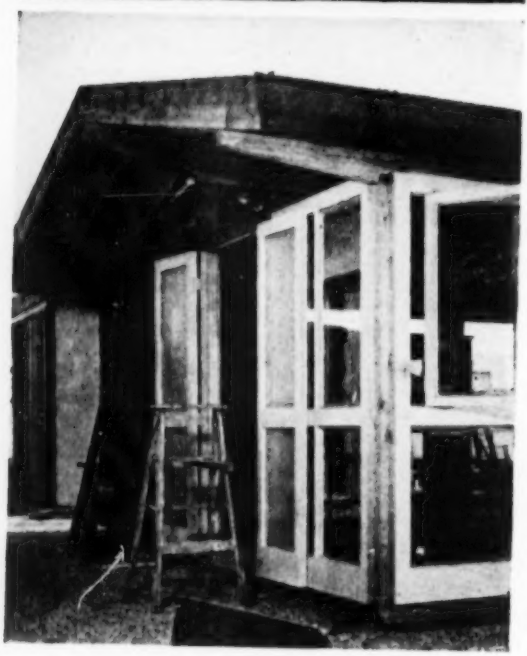
The present copyright law of the United States affords very little protection to the intellectual productions of the architect. The law protects only the *plan* or *design* of the architect and not the building ideas they contain. Further, the proprietor of a copyrighted plan does not have the exclusive right to execute the structure it describes. Accordingly, the protection afforded a copyrighted architect's plan is most elemental: It may not be "copied," that is, there may be no unauthorized printing, reprinting, publishing, copying, or vending of the *plan*. Any other use, no matter how unfair or dishonest, is not an infringement of copyright, although it may be the basis for a suit in unfair competition.

Where does this leave the architect? If his only protection is against copying of *plans*, direct or indirect, this sounds like a difficult thing to prove. If the *building* cannot be copyrighted, but only the plans, does this give an architect any protection when someone erects a structure copied from his? Some recent studies of the subject indicate that there may be an approach which has not yet been explored in the courts.

This new approach proceeds from the premise that no structure can be built without plans. In some form, if only to comply with requirements for building

May & Choate house.





Bristol Manor house.

permits and building loans, there must be plans. Hence it follows that if A wishes to build a house identical with one designed by B, he must have identical plans. How does A get these (unauthorized) identical plans? By *copying*, in some manner, the plans of B. And when he copies, he infringes the copyright.

There are various ways of copying plans. The *direct* method would be to trace, photograph, or blueprint the original plans. An *indirect* method would be to commit them to memory, and retrace them. Even more *indirectly*, a copy would be made according to instructions from a third party who had seen the original plans.

The new thinking on the subject goes a step further and asks: If the copyist makes his plans after having looked at, studied, perhaps measured and photographed the original *building* (which is not in itself eligible for copyright protection; only its plans are, we must remember), has he not, indeed, copied the original plans?

If this interpretation should be developed and upheld, it is believed that a complaining architect should be able to obtain practical legal protection. Certainly no commercial builder can construct a building without plans which have been put on paper. If the court orders destruction of infringed copies and an injunction against further copying, this should indeed be "practical relief."

This is an interesting twist. It must be borne in mind that the courts will not enjoin the copyist from *building* copies—only from using *plans* which are copies. The protection, actually, rests on the fact that no one can build, today, without plans.

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Just what the argument will be in the *May* v. *Bristol* case remains to be seen. Up to now, other plaintiffs have failed in the few suits there have been involving architectural "copying," with arguments based on imitation of the finished structure, or of an "idea."

A number of nationally prominent architects have indicated "complete sympathy" with May & Choate in the fight on this alleged infringement, and various AIA groups are following the case with obvious interest. The outcome can have important implications for the entire profession. T. H. C.

Bernard Tomson

it's the law

In a previous column *(September 1954 P/A)* I discussed the status of the architect as a leader in the field of construction, pointing out the implications arising in that respect from the failure of the architectural profession to support the adoption of Public Law 356. This statute provides as follows:

"That no provision of any contract entered into by the U. S., relating to the finality or conclusiveness of any decision of the head of any department or agency or his duly authorized representative or board in a dispute involving a question arising under such contract, shall be pleaded in any suit now filed or to be filed as limiting judicial review of any such decision to cases where fraud by such official or his said representative or board is alleged; provided, however, that any such decision shall be final and conclusive unless the same is fraudulent or capricious or arbitrary or so grossly erroneous as necessarily to imply bad faith, or is not supported by substantial evidence.

SECTION II

"*No government contract shall contain a provision making final on a question of law the decision of any administrative official, representative, or board.*"

The purpose of the statute was to protect those parties contracting with the Federal Government from the effects of two decisions of the United States Supreme Court *(United States* v. *Moorman* and *United States* v. *Wunderlich)*.

The decisions of the United States Supreme Court in *United States* v. *Moorman* and in *United States* v. *Wunderlich* and the importance of such decisions to architects, contractors, engineers, and owners were discussed in this column in the March 1950, October 1951, November 1951, and February 1952 issues of P/A. A review of that discussion, in the light of the enactment of Public Law 356, is of interest and significance.

In 1950, in the case of *United States* v. *Moorman*, the United States Supreme Court was called upon to construe a "disputes clause" in a contract between a Contractor and the Federal Government. The Court construed the clause to provide that, in the event of a dispute, the Government's Contracting Officer could finally and conclusively determine all questions of fact and law, with no right of appeal to the courts. The Supreme Court upheld the validity of such clause on the ground that the parties freely entered into such a contract and that they were, therefore, bound thereby. In reaching this conclusion, the Court noted that clauses in building contracts between Owner and Contractor which provided for the arbitration of disputes by the Architect were valid. The effect of the Supreme Court's decision was to make the Owner (here the Government) the final arbiter of any dispute which arose between itself and the Contractor, unless the Contractor could show fraud or bad faith.

After the *Moorman* case, some courts tried to limit its harshness by holding that only those disputes which arose during the progress of the work were to be finally arbitrated under the "disputes clause." Other courts examined very closely into the impartiality and good faith of the contracting officer and sought to find bad faith where his decision was arbitrary or without foundation. Many courts, however, strictly followed the *Moorman* decision, re-emphasizing the rights of the parties to make and rely upon such mutual agreements as they desired, refusing to upset any decision of the contracting officer unless a clear-cut case of fraud or bad faith was established.

Subsequently, the United States Supreme Court, in the case of *United States* v. *Wunderlich*, reaffirmed the position it had taken in the *Moorman* case. In the *Wunderlich* case, the United States Court of Claims had determined that a decision of a Contracting Officer was arbitrary, capricious, and grossly erroneous. The Supreme Court, by a vote of six to three, upheld the Contracting Officer's decision, on the ground that there was no proof that such decision was fraudulent or made in bad faith. The majority held that the Contractor had no recourse, even though the decision of the Contracting Officer was arbitrary and capricious. Three Justices of the United States Supreme Court dissented in a strongly worded opinion, which stated, in part:

"Law has reached its finest moments when it has freed man from the unlimited discretion of some ruler, some civil or military official, some bureaucrat. Where discretion is absolute, man has always suffered. . . .

"The instant case reveals only a minor facet of the age-long struggle. . . . But the rule we announce has wide application and a devastating effect. It makes a tyrant out of every contracting officer. . . . He has the power of life and death over a private business even though his decision is grossly erroneous. Power granted is seldom neglected. . . .

"The principle of checks and balances is a healthy one. An official who is accountable will act more prudently. A citizen who has an appeal to a body independent of the controversy has protection against passion, obstinacy, irrational conduct, and incompetency of an official. . . . The rule we announce makes government oppressive."

At the time of these decisions, it was my recommendation that determined efforts be made by architects, engineers, and contractors to have the "disputes clause" stricken out of government contracts, so that federal agencies would cease being judge and jury, as well as owner. Congress and the President recognized the inherent dangers implicit in such a clause, as construed by the United States Supreme Court, by adopting Public Law 356. The law provides for judicial review of the decision of any governmental department or agency concerning a question of law. It further provides that a decision concerning any question of fact shall be subject to judicial review if the decision is claimed to be fraudulent, capricious, arbitrary, so grossly erroneous as necessarily to imply bad faith, or is not supported by substantial evidence.

The statute, in permitting judicial review of many of the decisions of the contracting officer, affords protection to parties contracting with the government which they were not in a position to obtain for themselves through negotiating with the government. In dealing with the government, freedom to bargain is largely illusory. The right of judicial review should be an effective deterrent to arbitrary, prejudicial, or capricious acts on the part of an administrative official.

improved materials

In the construction of man's earliest cities the building materials used were entirely indigenous—those found to be the most plentiful or workable in a particular locality. Depending on the amount of woodland, the nature of geologic formations, and the prevailing climatic conditions, either wood, stone, clay, or cementious mixes—or some combination of these basic materials—would be utilized. As a civilization extended its lines of communication, however, materials from distant areas were imported, because of their relative abundance or because they more readily fulfilled the community's requirements for buildings. With these few fundamental materials (shaped, cut, and molded in an infinite variety of ways) the great structures of the past were erected: temples, baths, aqueducts, cathedrals, fortifications, villas, etc. It was not until the 19th Century that man-produced, technological materials were developed for use in construction (except for a few remarkable experiments). It was during the long period of evolution that the manner in which materials were employed resulted in basic recognizable styles—as discussed by Sibyl Moholy-Nagy in "Style and Materials" (*acrosspage*).

During the last 75 or more years, builders have been able to use new materials and to integrate them in new systems that have no kinship with the manner in which basic materials were traditionally assembled. That these new materials have had an effect on architecture—changed its appearance and made buildings more useful and comfortable for their occupants—is abundantly evident. How these will ultimately affect architectural style cannot be answered today.

For this issue, the Editors have chosen structures that evidence the present effect of improved materials on architecture. Following the Moholy-Nagy discussion are presentations of two houses in which a new use of a familiar structural material is employed for framework, a resume of numerous improved uses of porcelain enamel in architecture, and a group of four schools in which the principal design problem was the study and selection of materials that best fulfilled the requirements of the respective programs and budgets.

Style and Materials

*by Sibyl Moholy-Nagy**

Felix Candela, Mexican architect, recently stated that the "essential purpose of structure, that property which defines it as such, is to transform external loads into internal stresses and to transmit these, distributed along the structural members, to convenient locations." Had he added that it is the specific purpose of architectural engineering to create enclosed space by this structure, the nature of structure and space would have been defined. But we would still lack a full interpretation of architecture, since structure and enclosed space alone do not make a building: the third ingredient is style.

What is style? It is very tempting to parry with a paraphrase of Benedetto Croce's laconic last verdict of esthetics, "Art is what everybody knows it is," substituting the word Style for Art; or to take refuge in Walt Whitman's tongue-in-cheek primitivism, "All architecture is what you do to it when you look upon it!" But it would be too easy, it would not help to clarify an obvious concern about architectural style in current building design. To dispose of the clichés: most of us were told at one time or another in our training that if structure is the anatomy of building, style is its features; that John Ruskin made Victorian eclecticism respectable by defining architecture as "that part which impresses on a building certain characteristics, venerable and beautiful, but otherwise unnecessary"; that the *Art Nouveau* rebels of 1900 (in Victor Horta's words) "voided the uncompromising rigidity of the right angle by substituting the organically curved for the straight, and the bowed for the plane surface . . . in animated coloristic façades." And that Frank Lloyd Wright, notwithstanding the agonized groans each new design of his arouses from IIT to Cambridge's Mount Auburn Street, finally added to the two basic definitions of style as decoration and as organic growth, *style as idea*, when he stated, "Architecture is abstract. Abstract form is the pattern of the essential. It is spirit in objectified form . . . embodied in materials."

Valid as these definitions may be, they represent no more than an evolution of personal creeds. For even the most irreverent historian, there is something vastly more inclusive expressed in architectural style—*a balanced relationship of purpose, material, and form, visibly interpreted through the excellence of the architect.* And here, at once, at the very root of the definition, appears the basic division of two concepts of style that have prevailed throughout history. "Excellence of the architect" can be an expression of ideals shared by all. Through his interpretation of the common creed, the architect unites each building with the rest. Iktinos built that way, and so did di Cambio and Robert Mills. "Excellence of the architect" can also be quite the opposite—an expression of convictions and esthetic concepts that are peculiarly his own, distinguishing him and his buildings from everything else. Brunelleschi belonged to this group, as well as Balthazar Neumann and Auguste Perret. But all of them—the fulfillers and the rebels—are bound to available materials and skills. Individual excellence masters matter, but matter remains the stuff buildings are made of. The help or tyranny of materials decides, in the last analysis, architectural style.

The relationship of the builder to his materials — seen historically — is very much like his relationship to his environment. In the beginning of civilization, shelter design was subject to the unalterable properties of twig and reed, mud and stamped earth, Cyclopean rock and pebble. One cannot speak of architecture where construction adjusts to given means without any conscious form-giving effort; and one cannot speak of style where the primordial forces of magic beliefs predetermine each detail of structure and decor.

From this aspect, architectural style—as so much else—starts with Greece. It was during the astonishingly brief period of some 160 years, from the earliest stone temples at Olympia, just before 600 B.C., to the marble structure of the Parthenon, begun in 447 B.C., that the first of our two dominant style concepts emerged.

structural style

In the sixth book of the *Laws* Plato says: "A new beginning is like a God, saving all things." The beginning of freely interpreted style saved architecture from the static building forms, derived solely from the traditional application of materials to purpose. Our textbooks list a Mesopotamian and an Egyptian style, but it would be more precise to speak merely of architectural form. Aloys Riegl, eminent pioneer of style history, was the first to recognize that true style is the result of a will-to-art in the builder, who selects from alternative solutions the ideal synthesis of spiritual, material, and structural elements. A sufficiently wide range of building interpretations and of materials and techniques must have been obtained in a culture to create style as a testimony of architectural excellence. In Structural Style, the esthetic impact derives from the structurally expressed idea of the building. Since post-and-lintel construction was the structural principle of Greek architecture *(Figure 1)*, the large unit, varying from wood to stone to marble, determined the stylistic features. Wood excels through the facility of jointure and the divisibility into smallest units. It suggested the raking cornice, the subdivisions of entablature, abacus, and flute. Sicilian limestone added monumentality and texture: the archaic simplicity and strength of the Doric order seem always to conjure up the image of Paestum rather than Athens. And there

* *Assistant Professor of Architecture, Pratt Institute, Brooklyn, N. Y.*

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"In Structural Style the esthetic impact derives from the structurally expressed idea of the building." 1—Parthenon, Athens; 2—Colosseum, Rome; 3—Castle Hedingham, Essex; 4—Pitti Palace, Florence; 5—First Leiter Building, Chicago (photo: courtesy of Museum of Modern Art).

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was the Pentelic marble: by virtue of its density allowing the utmost linear refinement, the minute balance of calculable proportions, and by virtue of its hardness giving to Structural Style that peculiar quality of finality, an imperviousness to weathering and aging. Column, architrave, and portico are sublimations of structure into formal equilibrium, testifying to the eternal, nontransient quality of the human mind. They were appreciated at the date of their creation through common standards of rationality and taste.

The Greeks were supreme realists, deducing from observation of the physical universe the laws by which to live and to build. As in science, Greeks did not experiment in building. Structural and esthetic laws, distilled from observation and reasoning, were implementations of philosophical truth. They were as much incarnations of the *Logos* as philosophy, mathematics, and poetry. St. Paul, the Tarsian, spoke as the Greek native "of no mean city," and not as a Jew, when he postulated that "the invisible must be understood by the visible." The accord between service and form is one with the accord between ideal and reality.

Athens became the teacher of all epochs in Western Civilization striving for a visualization of universality and collective progress through harmonious form. For about 150 years, in the brief post-Augustinian climax, Rome had a Structural Style, expressive of the affirmative creed of the *Pax Romana.* The Theater at Orange, the Colosseum, the Pantheon, built between 50 and 150 A.D. superbly used the concrete unit to achieve an entity of structure and style. In the Colosseum *(Figure 2)*, the diminishing load is expressed not only in concrete components of diminishing density (lava, tufa, and pumice) but also in a subtle transition from horizontal emphasis in the squat Doric order of the lower arcade,

to intermediary Ionic orders, ending in the emphasized verticality of Corinthian pilaster strips which were (originally) surmounted by masts, soaring over the top cornice straight into the sky.

Structural Style vanished with the collective ideal of Rome, before the decadence. Almost a thousand years passed until the Comacine stone masons and the first cathedral builders in England and Northern France again felt the affirmative wave that called for Structural Style. In the 12th and 13th Centuries, Christianity had finally found its contact with the world of man. Cathedrals and castles were built to confirm St. Paul's demand for a visible style signifying invisible faith. The soaring walls of Hedingham *(Figure 3)* and the Choir of Beauvais share an intimate stylistic affinity. Verticality—the common ideal of man's unlimited faith in his alliance with a benevolent God—gave meaning beyond function to buttressing strip, tower, and pier. Florentine architecture of the Quattrocento represents the last historical flowering of Structural Style as a pure expression of a common ideal through structural form. *Palazzi* such as Strozzi, Pitti *(Figure 4)*, and Riccardi used a new structural unit—the rusticated stone block—to testify to a new phase of affirmative communality through intellect and taste. Variety within structural uniformity creates the severe rhythm of alternating window pediments, while story is marked off from story by horizontal moldings, acting as water tables.

Structural Style was killed by the perversions of late Renaissance eclecticism. The credit for its revival is due to America and the architects of the Chicago School. Cast iron, the ubiquitous symbol of the Industrial Revolution, seemed at first a stylistic embarrassment because its adaptation to molded forms made it the cheap means of every stylistic adultery. Such sleight-of-hand as Nash's Brighton Pavilion, or Labrouste's superb interior structure behind the Renaissance replica of the Bibliothèque Sainte-Geneviève, had indicated no more than a dreary continuation of neo-Renaissance. From this chaos, architecture was saved by the intelligence and taste of the Chicago pioneers. William LeBaron Jenney liquidated the old "mill" architecture and created the transparent bays of the First Leiter Building *(Figure 5)*. The first skyscraper was as much the visible expression of the invisible ideal of a worldwide Industrial Revolution as the Hellenic Temple had been of the harmony of mind and body. The skeleton frame, visibly expressed in horizontal-vertical rhythms, stylistically emphasized by steel-rimmed windows, was a new statement of Structural Style. Neither the advent of the exposed steel frame nor the glass curtain wall, 25 years later, surpass the revolutionary achievement of the Chicago School. Through rationality and taste arose a new stylistic variation as an impersonal statement of quality, conforming to the highest standards of the group.

applied style

The second style concept, persisting throughout the history of architecture, is Applied Style. It is the antithesis of Structural Style, and its definition is here attempted with some jitters because the reckless addiction of our age to the catchword of functionality has muddled the term "applied" into something dishonest and obsolete. Yet the ideological as well as the architectural justifications of Applied Style are in no way inferior to those of Structural Style. Applied Style simply means that "the balanced relation of purpose, material, and form, visibly interpreted through the excellence of the architect" (with apologies for the rare pleasure of putting oneself between quotation marks) is achieved through a conscious separation of architectural structure from architectural ornament, and a conscious separation of rationality from taste. Perhaps its earliest historical appearance was in the Roman Villa. In the First and Second Centuries A.D., the plan and structure of the *domus* had been standardized. The plan was determined by the atrium, enclosed on all sides by a succession of cubicles, facing the street with austerely plain walls. The standard building material was brick, covered with stucco; the roof construction was the open rafter-truss combination, covered with pan tiles. Style was applied after the structure was finished, interpreting the meaning of the term on a highly individual basis. There were wall decorations *(Figure 6)* creating (through the medium of perspective rendering) arcades, colonnades, niches, landscapes—endless spaces within one space. Mosaic pavements conjured up below the feet of the visitor a world of depth as if he were diving into a new dimension.

Presently, Applied Style carried over into religious buildings which, for many centuries, had lived upon the borrowed vigor of the Greeks' Structural Style. The basic plan of the circular temple, for instance, remained unaltered and so did the method of wall construction. But roofs became pointed, domed, corbeled; walls vanished behind peripteral, pseudo-

"Applied Style . . . a conscious separation of architectural structure from architectural ornament, and a conscious separation of rationality from taste." 6—Mural from villa of Lucretius Fronto, Pompeii; 7—St. Peter's Hospital, Bristol. (Photos: The Bettmann Archive.)

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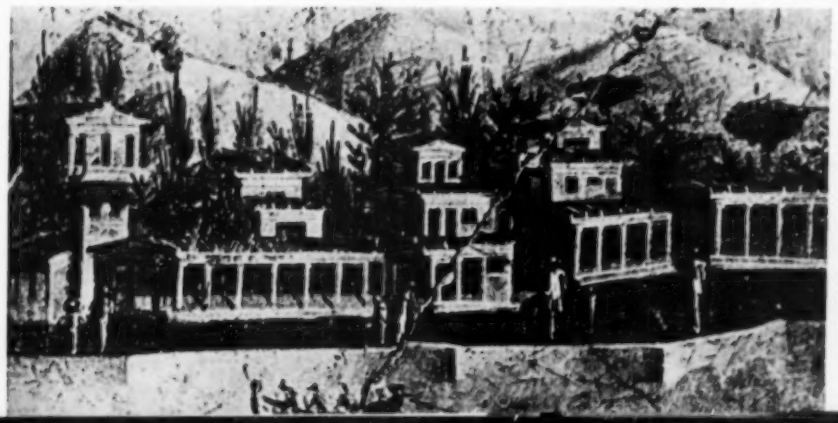

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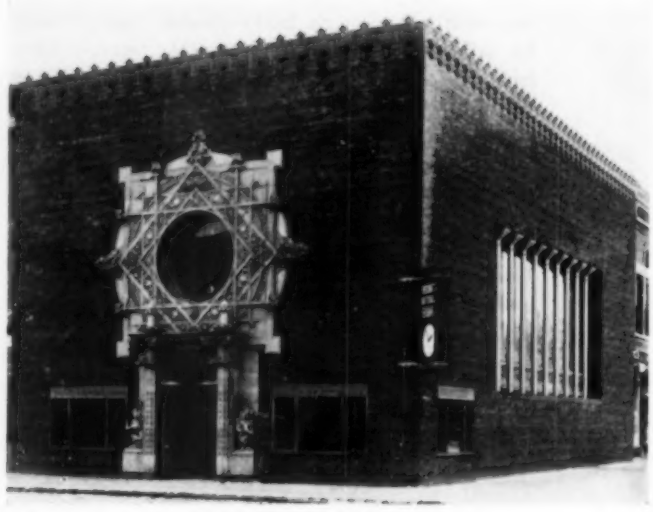

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"Liquefied stone, sculptured and gilded wood, and molded stucco were applied to the structural background. . . ." 8—*Molded stucco on dome of baroque church. "Louis Sullivan wanted the ornament 'to grow from the wall like a flower grows from a stem,' but it proved a difficult task. . . ."* 9—*Merchants' National Bank, Grinnell, Iowa* (photo: courtesy of Museum of Modern Art).

peripteral, porticoed, and arcaded exteriors. The only element common to late Hellenistic buildings was the concern for the application of style beyond structure. And with it, the main character of Applied Style was established. It is as individualistic as Structural Style is communal; as emotional as the other is intellectual. It is flux and does not aim at finality. Its contact with the beholder does not depend on shared ideals and principles but on individual imagination and interpretation. Most important of all: Applied Style does not depend on the innate resistance and character of materials. It achieves individual expression by using the simplest known structural method as a prop to display the variability of the small building unit and the pliable mix.

After Rome fell, European man struggled through the oblivion of the Dark Ages toward the victorious group-consciousness of the Gothic expressed in Structural Style. By 1400 A.D. the separation of the individual from the masses by means of wealth, education, and title had been achieved, and again it was time for the individual language of Applied Style. In Flamboyant and Tudor, structure vanishes behind screens of stone lace-work, terra-cotta facing, stucco pendants and drops, and the delicately carved end-brackets of hammerbeam roofs that float like visual illusions between the eyes and the structural baldness of the roof construction. Tudor chimneys twist and curl in endless variations, and each magpie half-timber house proudly displays its own unrepeatable ornamental pattern *(Figure 7)*. The Applied Style of the Flamboyant Age was religious only in name. Its most characteristic example is Rouen's Butter Tower. Here a stylistic extravaganza of pure ornamentation proudly testifies to the wealth of the burghers who could afford to trespass religious laws at a scale that made such a monument possible.

For a bare 150 years, Humanism and Reformation disciplined this exuberance by a new collectivism. With the 17th Century, Applied Style was back as the supreme visualization of Enlightenment and Absolutism. Baroque man had freed himself from the tutelage of church and imperium. He could dismiss ecumenical canons. He had become conscious of himself as a creator, accountable to no one but his own genius. Liquefied stone, sculptured and gilded wood, and molded stucco were applied to the structural background as if this background were a painter's canvas *(Figure 8)*. Bernini gave essence to the whole concept of Applied Style when he turned away intruders from his working table, exclaiming: "Don't talk to me. I am in love!"

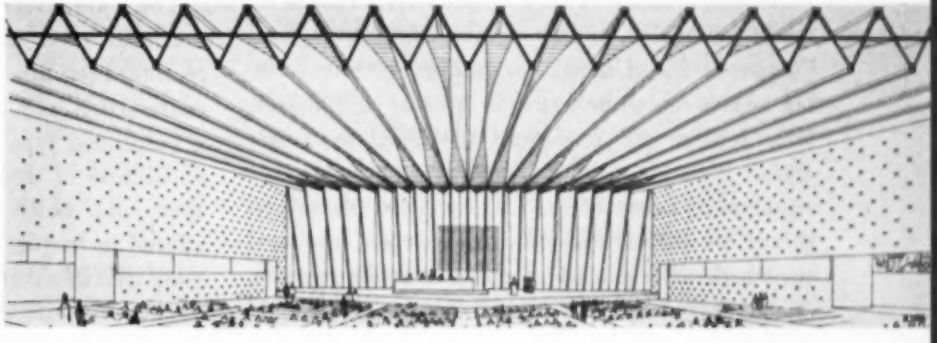
Nationalism and technology eventually choked the creative individualism of the Baroque, and Applied Style in its purest form—conceiving of the house as a piece of art—has never been revived. Its essential basis—the liberation of design from commonly acknowledged principles of rationality and taste—had been destroyed. But architecture, to quote one of its most tired definitions, persisted in being "an

art for all men." The primordial compulsion that changed piled sheltering material into stylistic patterns refused to die.

At the turn of the 20th Century the two great antithetical principles—Structural Style and Applied Style—reappeared in new interpretations. Successive attempts were made to achieve a workable synthesis between structure and ornament. Louis Sullivan wanted the ornament "to grow from the wall like a flower grows from the stem," but it proved a difficult task, in spite of the deceptive simplicity of the statement *(Figure 9)*. The concepts of structure and decoration, separated for many centuries in the minds of man, fused only unwillingly, as the many abortive attempts at an equalization of structure and form show. *Art Nouveau* degenerated into Gaudi's Sagrada Chapel *(Figure 10)*; the Werkbund idea eventually produced the oddity of Höger's Chile House; and Sullivan's dedicated search has its last echo in the labored decorative applications of Wright's Oklahoma skyscraper.

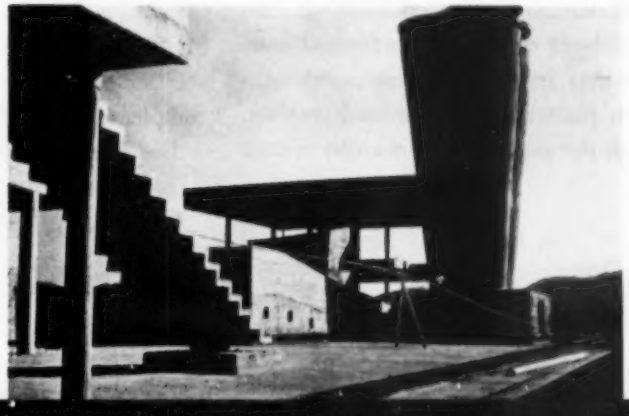
The reason for so much stylistic confusion lay in the transitional character of the early 20th Century. Mutually exclusive traditions fought for equal recognition: Platonism and Materialism, Mass Culture and Individualism, Welfare Housing and Real Estate Speculation. In direct relationship to architecture this is the century of devotion to significant form and devotion to functional efficiency. Like Balaam's ass, the '30s and '40s frustrated themselves by the assumed need to choose between one or the other. Now, in the '50s, there are indications—few still and far between—that it is the specific task of our generation and of this century to come to terms with the structural thesis and the applied antithesis—through a reciprocal synthesis. Some of the best among our architects start to realize that by virtue of our late place in history we are equally committed to technology and to ideology. For the first time in 3000 years of building history, we are free from the limitations of wood, stone, and brick, of natural supplies and the principle of compression. We also are free of the exclusive patronage of church and state, nobleman and capitalist. Our range is limitless in all directions. The revolutionaries among 20th Century architects have carried these reciprocal values into their own attitude. They have resolved the age-old contrast between conformer and individualist. They build for common need with personal expression. There are the Breuer-Zehrfuss-Nervi UNESCO Conference Building *(Figure 11)*, Nervi's concrete vaults for public assembly halls, and Le Corbusier's roof sculpture on a modular structure *(Figure 12)*; Niemeyer's undulating apartment buildings and Johnson's whimsical glass room on a purely functional masonry foundation. Schools in Vermont and small Bay Region houses show Bernini's "being in love" fused with Gottfried Semper's "Style as product of material and purpose." To be sure, the leftovers of structural paucity and tasteless application are with us in appalling number. The boredom of the skyscraper box, hardly relieved by aluminum, and the gaunt ugliness of the residential matchbox still drive the emotionally unsatisfied masses to appliqué façades of true Williamsburg-Baroque. But a third epoch of Western architecture is on the way, and we are not only the witnesses but also the responsible makers of this new era, in which a balanced relationship of multiple purposes, adequate use of technological materials, and the forms of an underivative visual culture, are visibly set forth through a *Reciprocal Style*.

10



11

10—Sagrada Chapel, Barcelona; 11—Plenary Session Hall of UNESCO Conference Building, Paris; 12—Apartment house roof, Marseilles. (Sketch by Breuer, Zehrfuss, and Nervi; photos: courtesy of Museum of Modern Art.)



12

trends in lightweight metal structure

Very few building materials, if any, can truthfully be called "new" (that word so often misapplied by various publicity media). New uses of materials, however, are almost always of interest—either when these materials are used by themselves or in combination with others to answer specific building requirements. Attracting a great deal of attention today is the application of lightweight metal framing systems to houses and smaller types of commercial structures. Certainly one of the most promising of them is the use of Unistrut steel-channel members with patented bolt and spring-lock connections as framing members of walls, partitions, and roofs in schools and homes *(pages 100 to 109)*.

Another manufacturer with pilot installations already completed in this field is the Penn Metal Company, Inc. Unusual examples of their framing system are to be found in a house at Hanover, New Jersey, and a hospital (designed by James Byron Bell, New York architect) now under construction at Boonton, New Jersey. Penn Metal partitions are shop-fabricated of lightweight structural steel and, after placed in position at the job site, anchor bolts or concrete nails are used to hold them in position. Because erection of these partitions is accomplished in a minimum of time and as they are made of a relatively indestructible material, this manufacturer has been able to compete successfully with concrete in all of its forms and, in a great many instances, with wood framing. Extending the use of light steel, it is perforated and made nailable so that it is easy to tie metal lath to it or to nail on plasterboard. Pipe and conduit can be run through the perforations, thereby eliminating chipping and patching. Roof decks can be precast-concrete panels (such as Insulrock or Porete), gypsum plank, or corrugated metals.

Macomber Inc. has developed an ingenious combination of nailable steel and a three point connection—called V-Lok—to anchor open-web trusses to steel columns. An increasing use of this framing method is noted in schools, commercial buildings, industrial plants, and homes. Among the most recent structures to use V-Lok are the Beverlee Drive In (Columbus, Ohio) with its abundant use of cantilevered outriggers for roof overhangs and a new 50,000 sq ft building for the Diebold Safe and Lock Company which was erected in five days.

The Haven-Busch Company reports that although much of their interest in structural design has recently been directed toward improved rigid-frame construction and exposed girder construction with a suspended type of purlin system, they have devoted most of their efforts to improving their long-span joists which for at least two years have been offered in lengths up to 125 ft. Laclede Steel Company indicates there is an increasing use of open-web steel joists with extended ends. So that architects may achieve overhanging roofs with attendant construction and labor savings in school building design, they have recently developed a scheme for framing three-bay standard roofs wherein two joists with overhanging cantilever ends are used to form classroom areas with end-connected cantilevers framing over the interior corridors. In this way only two pieces are handled on the job to complete a full three-bay frame.

Because they permit greatly reduced erection

time, prefab curtain-wall systems are gaining the favor of many designers. Pioneers in this type of wall construction *(Science and Pharmacy Buildings at Drake University, November 1950 P/A)*, Hope's Windows Inc. offers two basic types of prefab window-wall installations. One is the single story window-wall unit. This system uses a frame unit of an easily-handled modular width which extends from floor slab to roof slab and includes a steel sash (usually a projected type), insulated panels at top and bottom, and, where required, an opening for air-conditioning equipment. This system has the following advantages: It is easily and quickly erected, permitting a rapid closing-in of the building; the design is flexible and almost any desired arrangement and combination of ventilating sash, fixed glass, and insulating panels can be accommodated; sill-high masonry and exterior columns are eliminated and the weight of collateral construction may be reduced accordingly; and, where permitted by building codes, interior back-up masonry may be eliminated.

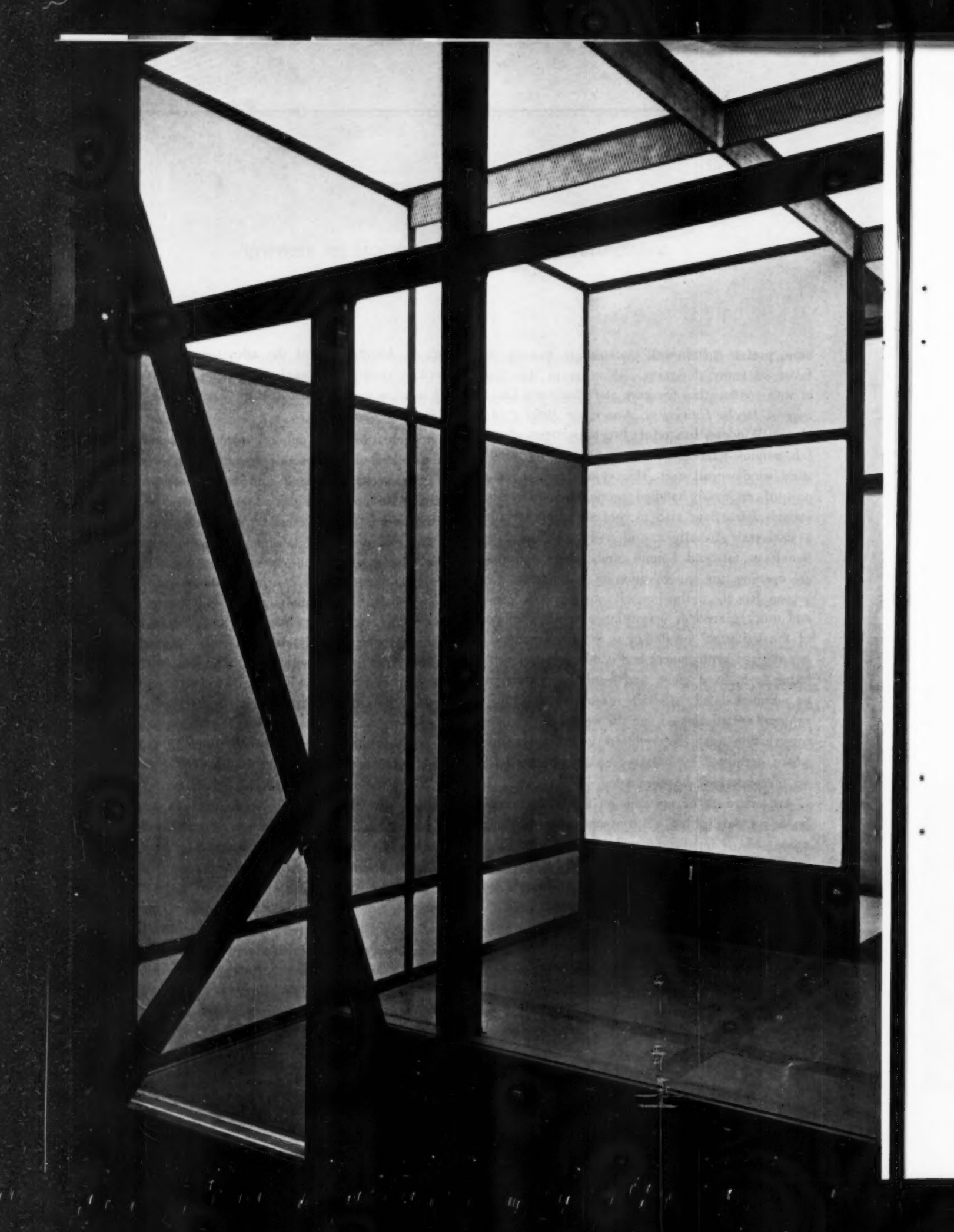
An outgrowth of research on this system might be a standardization of component parts of the units such as insulated panels, sash, air-conditioning louvers, etc. Another result could be standardization of collateral construction and equipment such as under-sill air-conditioning equipment and sill-high cabinets, shelving, and bookcases for schools.

The second system is adapted to multistory buildings and is based on a pressed-metal frame or grid which covers the entire face of the building from grade to roof slab of the top story. Into this frame are placed sash, fixed glass, insulating panels, etc., as desired. All of the advantages listed for the first system also apply. *(Truscon Steel's prefab window wall is illustrated in "Porcelain Enamel Resumé," page 110.)*

Reynolds Metals Company recently announced an insulated-aluminum-wall system which consists of exterior aluminum skins and interior wall panels attached to opposite sides of steel girts. The exterior wall is formed of ribbed or corrugated aluminum siding material; an interior insulating panel consists of a honeycomb-paper core bonded between two aluminum sheets. Interior panels are hung on the steel building frame by means of continuous aluminum extrusions, while the exterior skin may be hung by clips, studs, or screws.

The Aluminum Company of America recently used an easy-to-erect aluminum sandwich curtain wall on their Heavy Press Plant at Cleveland. The curtain wall is fabricated from two slices of corrugated aluminum sheet between which is a 1-in. thick layer of glass fiber insulation. Its U factor is .155. First one layer of .024-in. thick siding was applied directly with self-tapping screws to the siding girts of the structural steel framework. Insulation was then temporarily fastened to the .024-in. sheet. In the last step, an outer layer of .032-in. thick industrial siding was anchored to the structure with self-tapping screws that also permanently hold the insulation in place. The average bid from six contractors was $1.11 per sq ft.

In the two following features, "Two Unistrut Houses" and "Porcelain Enamel Resumé," two special aspects of lightweight metal construction are more fully documented.



Unistrut used for house framing

Among characteristics that architects look for in a structural material and method, perhaps none is more desired than speed and ease of erection; flexibility; and the ability to expand the structure with minimum change and waste. The Unistrut system, utilizing standard Unistrut steel-channel members and patented bolt and spring-lock connections (along with various special brackets and fittings), offers all of these advantages—and many more. All that is needed to assemble this large-scale "Meccano set" are a hack saw and a wrench—"so simple a child can operate" (*photo at top*).

No holes have to be drilled. A spring-locking nut is simply inserted in a channel member and slipped along the channel to the point where another member is to be joined. A fitting (bracket or otherwise) is then centered above the nut, and a bolt is inserted and tightened, thus attaching the fitting and also holding the nut in position. The member to be joined is attached to the fitting similarly.

The channel framing members come in various standard sizes, with corresponding fittings and pieces. The different channel sizes are spot-welded together to form larger members. Thus, within the range of a few standard elements, infinite variety is possible.

Until 1949, Unistrut was used chiefly for such industrial elements as storage racks, jigs, scaffoldings, etc. At the company plant in Wayne, Michigan, however, it had been used to frame two factory buildings. Convinced that the material had great potentials in the building field, a research project was launched and supported by Charles W. Attwood, President of the Unistrut Corporation—an architect turned manufacturer. Undertaken by the University of Michigan's College of Architecture and Design, in collaboration with the College of Engineering and the School of Education, the work went forward under the administrative direction of the University's Engineering Research Institute. The program, limited to Unistrut's potential for use in low-cost school construction, resulted in a prototype school, a detail of which is shown in the photo (*across-page*) of a full-size mockup of a corner section. The research included experiments with various arrangements not only in disciplined design and structural organization, but also in natural and artificial lighting, use of color, and acoustical and heating problems.

The two houses shown on subsequent pages, though not a part of the official research project, are a direct outgrowth from it. For these houses were designed, for their own families, by two of the university professors who were active in the prototype-school research.

Like the prototype schools, both houses use welded roof trusses, made up of Unistrut elements. Currently, the potential of Unistrut's use for a space-frame system (*below*) is undergoing tests, and a research laboratory for the College of Architecture and Design, utilizing the space-frame system, is being erected in the college courtyard.

the Larson house

Architect and owner of this house—Prof. C. Theodore Larson, of the University of Michigan College of Architecture and Design—was supervisor of the research project that studied Unistrut's potential use for low-cost schoolhouse construction.

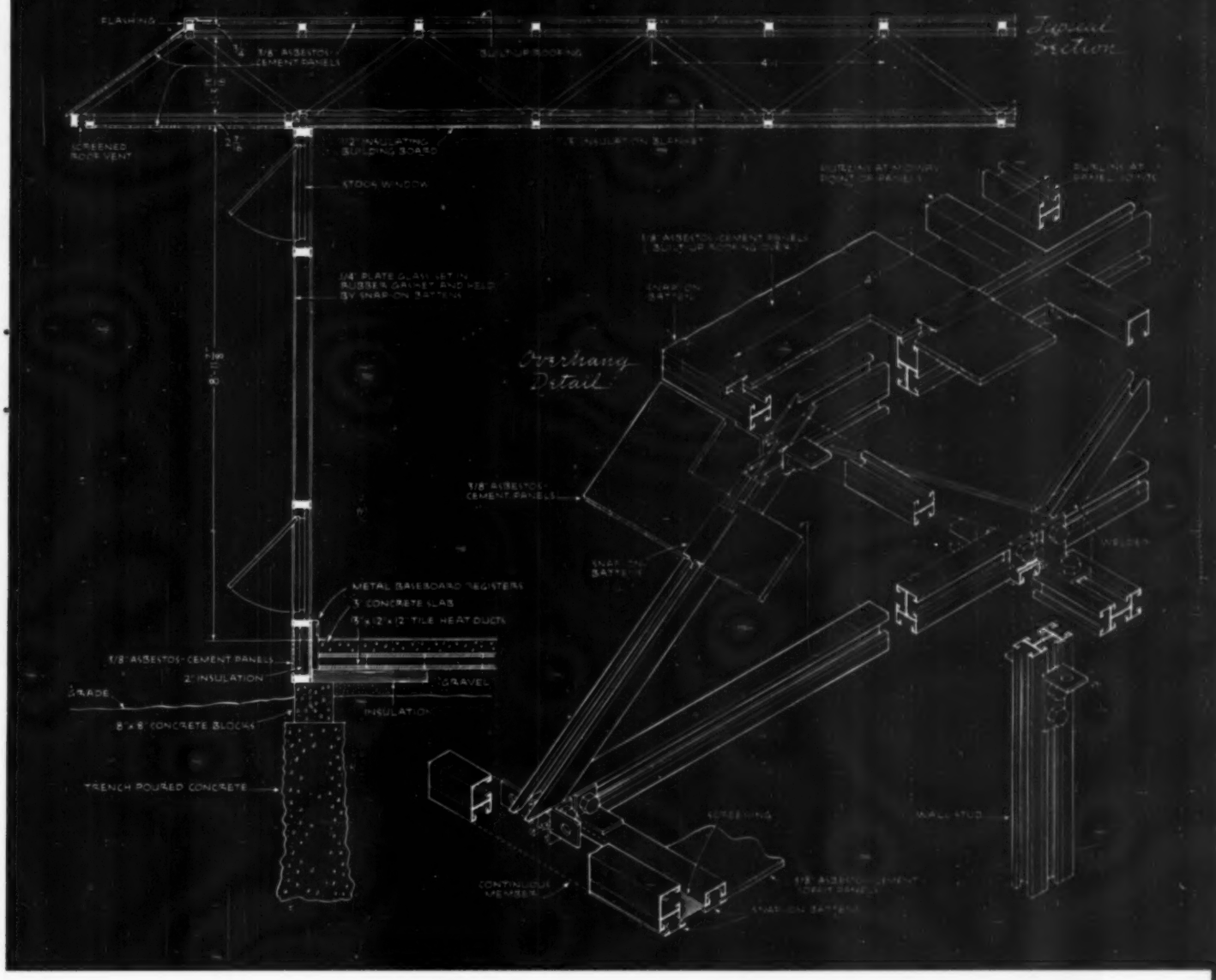
Among the advantages of Unistrut construction is that the steel channels can be used as wiring raceways. Toggle switches and plug-in outlets are readily fitted into the closer battens. General contractor for foundations and concrete floor slab and for finish wood carpentry was Albert Duckek. "On all the rest," Larson tells us, "I acted as my own general contractor, erecting the steel framing and applying the wall, roof, and ceiling panels, with the aid of my two sons and some of their school chums. I subcontracted the roofing, glazing, electrical, heating, plumbing, and flooring work."

The Unistrut sidewall studs are spaced 4'-1" on centers, allowing use without cutting of standard, 48-in.-wide curtain-wall paneling. The extra inch takes care of the steel-framing joint (⅞" for the channel slot; ⅛" for tolerance). Both exterior and interior wall panels are of asbestos cement; ceiling panels are insulating building board. Most flooring (over the concrete floor slab) is of cork tile, though asphalt tile was used in bathrooms and utility room, and vinyl-surfaced cork is the kitchen flooring. The walls are insulated with glass-fiber material, while blanket-type insulation occurs above ceilings.

The heating system, on which Prof. Floyd Calhoon was consultant, is a combination of floor radiation and hot-air convection. Hot air from the down-feed furnace travels through a honeycomb of hollow-tile ducts in the floor slab and emerges into rooms through registers along outer walls at floor level. As the air loses some of its heat, it travels through the rooms to the main-hall corridor, where a cold-air return grill near the ceiling picks it up and delivers it into the plenum chamber directly above the furnace, where it is mixed with fresh air from outside, again heated, and recirculated.

The progress photos and plan clearly show the Unistrut frame organized on a 4'-1" module to accommodate standard surfacing panels. Framing drawings (acrosspage) *detail the typical wall, roof, and partition connections.*

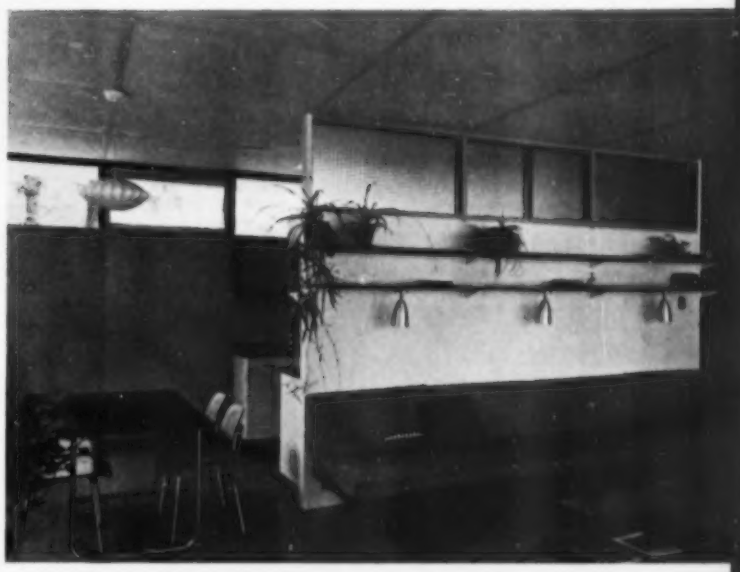
Photos: David Reider


Typical Section
FLASHING
3/8" ASBESTOS-CEMENT PANELS
BUILT-UP ROOFING
SCREENED ROOF VENT
2" INSULATING BUILDING BOARD
2" INSULATION BLANKET
STOCK WINDOW
1/4" PLATE GLASS SET IN RUBBER GASKET AND HELD BY SNAP-ON BATTEN
Overhang Detail
3/8" ASBESTOS-CEMENT PANELS
METAL BASEBOARD REGISTERS
3" CONCRETE SLAB
8"x12"x12" TILE HEAT DUCTS
3/8" ASBESTOS-CEMENT PANELS
2" INSULATION
GRADE
GRAVEL
INSULATION
8"x8" CONCRETE BLOCKS
TRENCH POURED CONCRETE
SCREENING
WALL STUD
CONTINUOUS MEMBER

TOOLS
B.R.
B.R.
STUDY
CARPORT
UTILITY
LIVING
LEAN-TO GREENHOUSE (FUTURE)

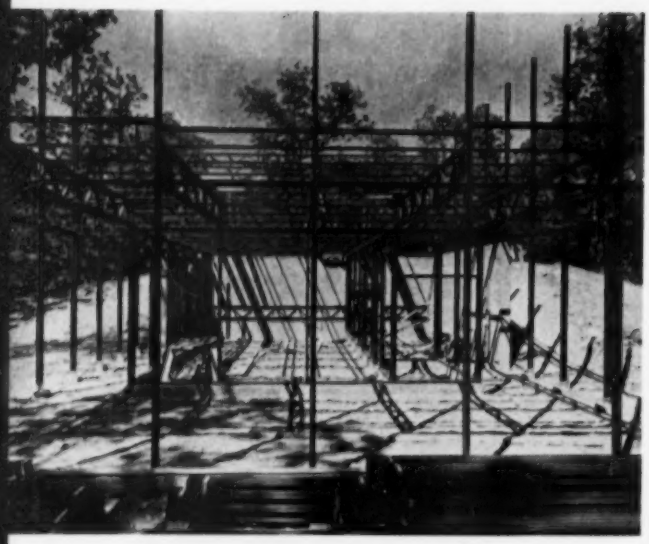
The house is on a level, one-acre site, on the bank of a beautiful pond toward the east and with a busy, gravel road to the west. Hence, to enjoy the view, the east side of the house (top) *is opened with a full wall of glass, while the west front* (above, left) *has relatively few openings.*

Unistrut house framing: the Larson house



For the living room, the architect designed and built two coffee tables and the frame for the 12-ft couch out of Unistrut. Only separation between living-dining space and kitchen is a storage partition (right).

Unistrut house framing



the Sanders house

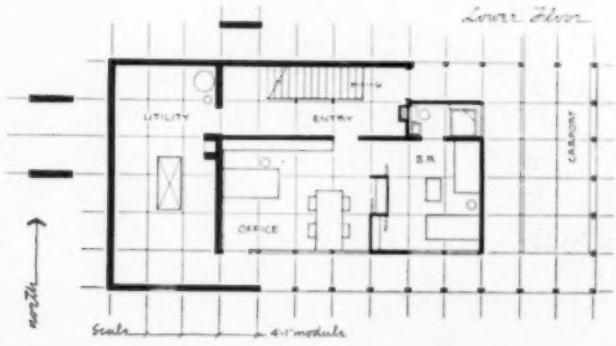
Built on a heavily wooded, hilly site, sloping away to the south with a fine view of the Huron River, this two-level Unistrut house, like the Larson house, uses basically the same structural system as that developed for the prototype school in the University of Michigan's research program. It was also designed by and is the home of a university professor and architect, Walter Sanders, of the New York firm of Sanders, Malsin, Reiman. Sanders served as General Consultant in the University-Unistrut research work. Albert Duckek was general contractor.

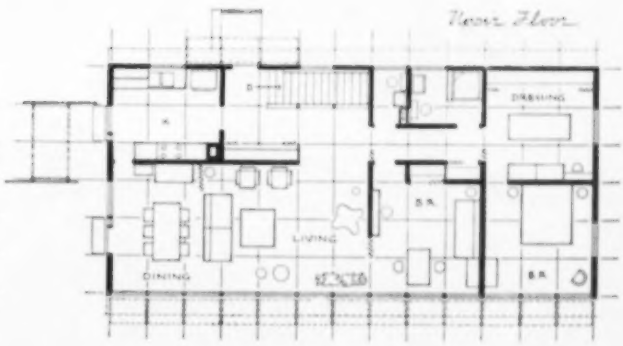
Part of the purpose in building these two houses—apart from providing homes for the two professors and their families—was to demonstrate how the Unistrut system, though limited to certain standards, results in very different design expressions depending both on the architectural hand at work and on varying site conditions.

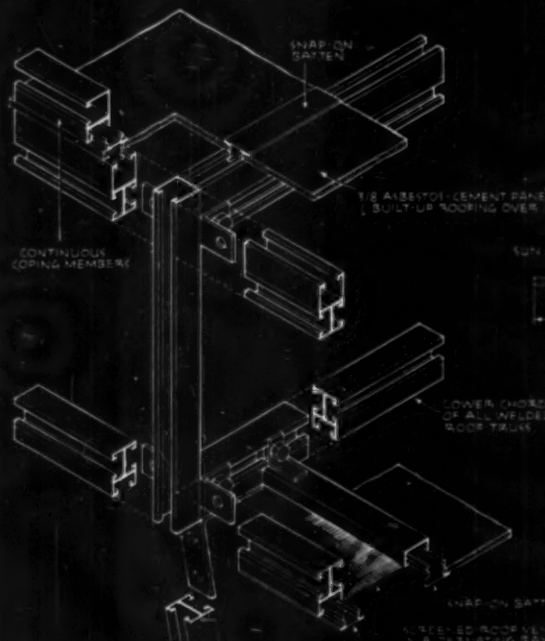
The in-sloping struts (*details, across-page*) were considered a necessary part of the *school* proposals, since there are few, if any interior partitions in the typical classroom sections, and the diagonals are needed to carry tension stresses from the roof overhang down to the floor-level studs. In the Sanders house, they carry small tension loads, but they were used here mainly to support the cement-asbestos sun guards, and, as Sanders says, "they constitute a sort of built-in scaffold for any purpose. They are particularly useful during construction."

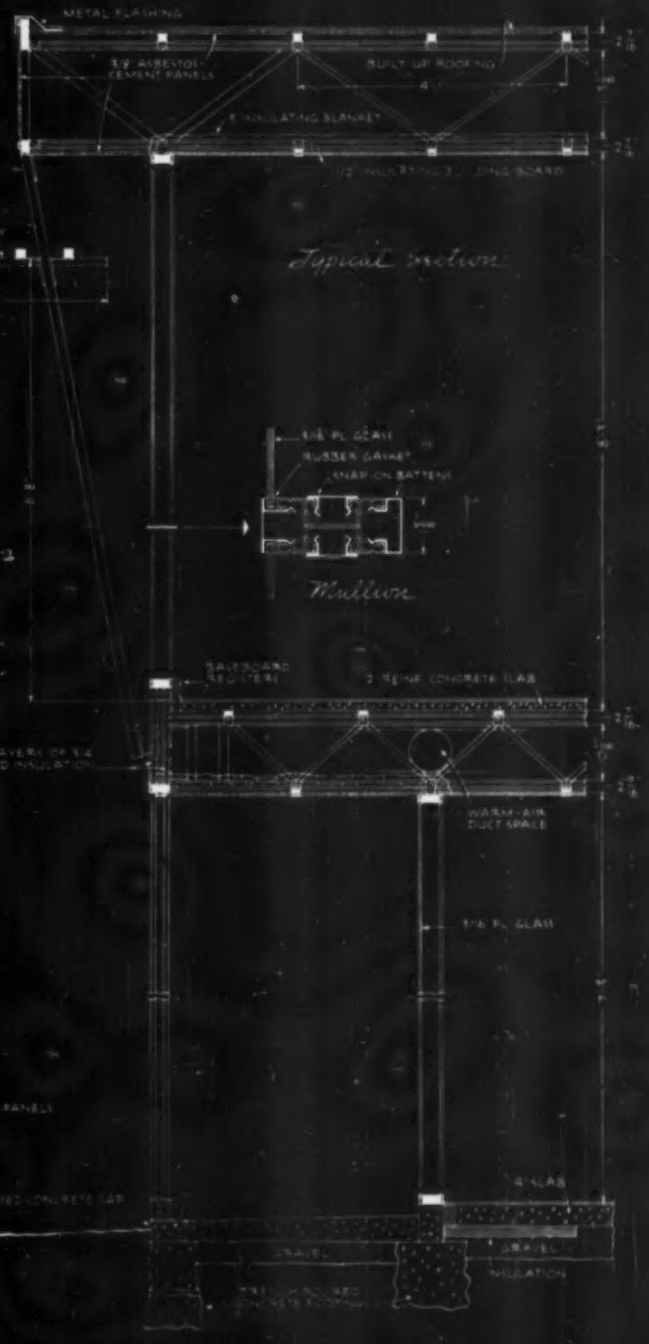
All major living spaces face south, and the lower floor can be readily closed off as an efficiency apartment. As in the Larson house, the 4′-1″ module is used and for the same reason; the upper floor is 8′ high; the lower level, 7′.

Exterior wall panels are $\frac{3}{8}$″ asbestos cement; interior walls and ceilings are of $\frac{1}{2}$″ insulating building board. Floorings are either asphalt tile or vinyl plastic asbestos. Rigid glass fiber insulates the walls, while blankets are used in ceilings. Heating is accomplished by a forced warm-air system, evenly distributed in the floor plenum by stove-pipe ducts, and exhausted in the living spaces through continuous baseboard registers.

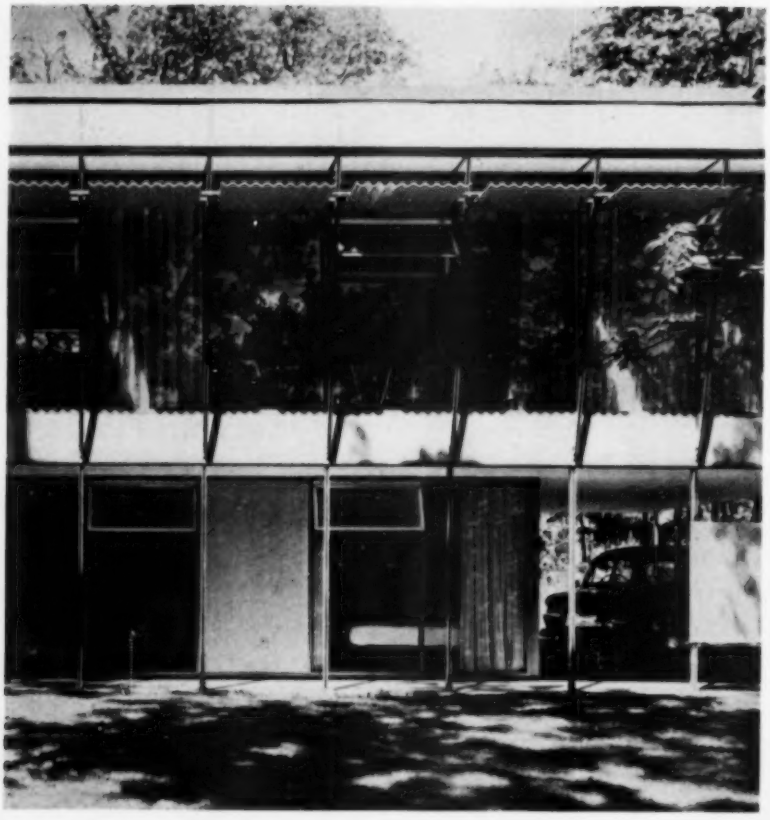

Lower Floor
UTILITY
ENTRY
OFFICE
CARPORT
north
scale
4'-1" module


Upper Floor
DRESSING
LIVING
DINING
BR.
BR.


SNAP-ON BATTEN
CONTINUOUS COPING MEMBERS
LOWER CHORD OF ALUMINUM ROOF TRUSS
SNAP-ON BATTEN
CONTINUOUS MEMBERS
ASBESTOS-CEMENT PANEL
TYPICAL WALL STUD
SNAP-ON BATTEN
Sun Canopy and Roof Overhang

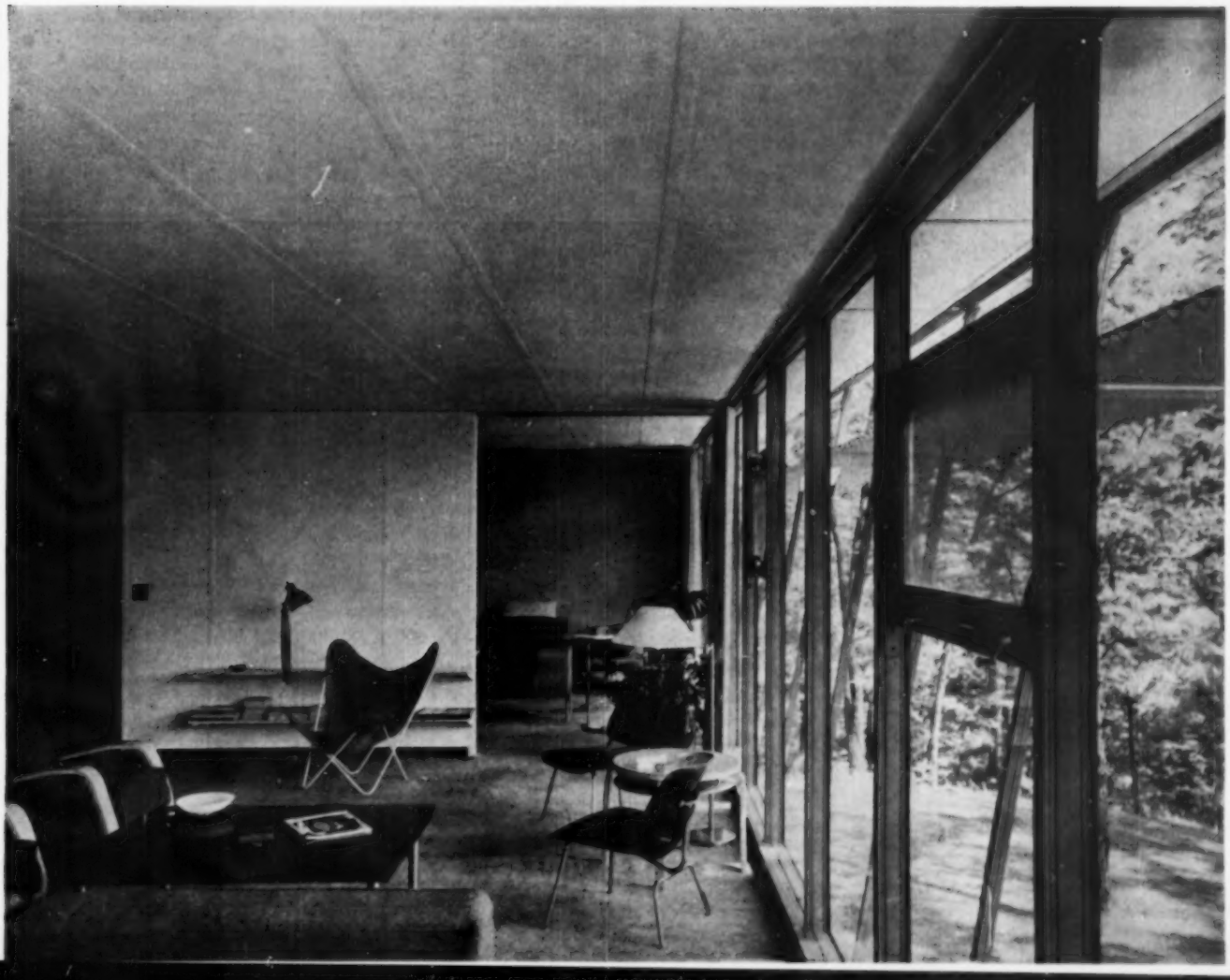

METAL FLASHING
BUILT-UP ROOFING
SUN CANOPY
Typical section
Mullion
SUBFLOOR
2" REINF. CONCRETE SLAB
WARM-AIR DUCT SPACE
1/16 PL. GLASS
GRAVEL
INSULATION

On the south (view) front of the house, sun control is handled by means of the roof overhang, in combination with the sunshades supported on the diagonal struts, as well as by the setback of the ground-floor wall, where it borders living spaces. Photos: David Reider



Unistrut house framing: the Sanders house

The living-dining and study-guest-bedroom areas align along the south window wall. Because of placement on the site, doors open to grade from both upper and lower levels. The pattern of the prototype school mockup (above) is reintroduced to emphasize once again the variety that can derive within the discipline—as in the musical scale.



porcelain enamel resume

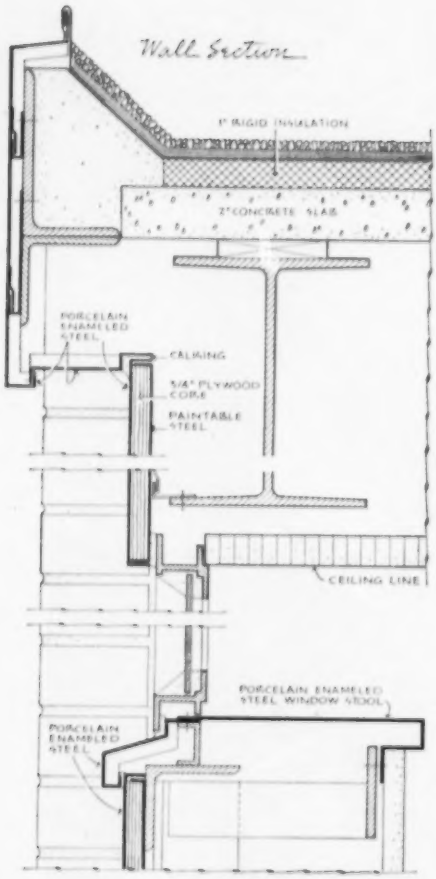


Figure 1—wall section of Whiting Lane Elementary School, West Hartford, Conn. Fascia- and spandrel-panel cores are plywood.

Glass-fused-to-metal, known as porcelain enamel, has become familiar as a building material throughout the United States during the past half century, and every structure containing it has offered a vivid demonstration of its durability, strength, ease of cleaning, and low maintenance cost. However, the unimaginative design of most buildings using porcelain enamel has, almost until the present, inhibited its use in more important buildings.

In the past two or three years, however, an exciting transformation has come about. Porcelain enamel, due to the research of a few brilliant technicians and the ingenuity of a few architects and artists, is becoming accepted throughout the nation for curtain walls, spandrels, fascias, and many other exterior and interior uses in modern buildings of the most advanced design. Two major developments have brought about this new acceptability of the material. The first is the perfection of laminated panels. These panels have sufficient rigidity to eliminate crowning and offer in a single unit all the qualities of thermal-acoustical insulation and fire protection that hitherto have usually been obtained by costly and complex combinations of materials erected at the site. The laminated panel as a practical product is hardly more than four years old —the first major installation being the General Motors Technical Center completed in 1951. The second new development, which reached a stage of actual usability only this year, is an acid-resistant full-matte porcelain enamel that eliminates the general objection to gloss and reflectance which heretofore inhibited the material's use in public and large commercial structures. The new matte enamel eliminates glare and has about the same amount of gloss as a piece of smooth but unpolished granite. Although somewhat more limited than regular porcelain enamels in color range, it can be obtained in a variety of pastel shades. The first building using this full-matte acid-resistant enamel to any great extent is the recently completed Whiting Lane Elementary School at West Hartford, Connecticut (*Figure 1*). Moore & Salsbury were the architects.

what is porcelain enamel?

Its base is glass in the form of frit or small gravel-like crystals. Together with metallic oxides to provide the desired color, the frit is ground to an almost microscopically fine powder in solution with water. Next, the mixture is sprayed on a metal base, dried, and then fired (at heats ranging as high as 1530 F) until the glass and metal are fused. Porcelain enamel is an inorganic material throughout, combining the chemical stability of glass with the physical strength of steel. It is a *permanent* finish. Ordinary paints, enamels, and baked enamels, on the other hand, are organic substances, subject to deterioration at varying rates, depending on their quality.

enameling steel

The most common metal used as a base for porcelain enamel is enameling steel or iron. This is a very low carbon steel which should be 99.9 percent pure. For architectural purposes, 26 to 14 gage sheets are available—26, the lightest, is about 0.0179″ thick and 14, the heaviest, around 0.0747″. Lighter and heavier gages, though available, are rarely used in architectural work.

Although occasional extra-large pieces can be specified at additional cost, generally speaking the maximum practical size of finished architectural porcelain-

New Developments in Architectural Porcelain Enamel

*by Robert A. Weaver Jr.**

enamel sheets is 4′ x 10′. If used as flat panels, sheets of this size must be laminated to insure flatness.

aluminum

This light metal is used as an enameling base by some fabricators, but it is felt generally that it is not yet entirely suitable for most architectural enameling purposes. It melts at around 1220 F and consequently the enameling frits used on it must have a correspondingly low fusing point, around 1000 F. This results in a much softer surface. (Enameling steel melts at approximately 2800 F and enamels fuse at about 1530 F.) Also, aluminum sheet is quite bendable, lacking the rigidity (unless corrugated or fluted) that gives enameling steel its inherent strength. Nevertheless, research in various aluminum alloys for enameling purposes is under way, and there can be little doubt that, for certain applications, aluminum-based porcelain enamel will soon be acceptable.

selection of enameling steel gage

For many years, the standard specification for architectural purposes called for 16-gage metal. However, with the advent of new techniques, it has been found that lighter gages may often be used to advantage. When large sheets are laminated to backing materials, an 18-gage steel is entirely adequate, and in certain applications metal as light as 26 gage has proved satisfactory. Such is the case with porcelain-enamel tile. These units, 4½″ x 4½″ or 8″ x 8″, are applied with a waterproof mastic to an asphalt-impregnated, grooved fiberboard which self-locates each tile; joints are finished with a specially designed grout. These tiles are literally the first improvement on ceramic clay tiles in history, since they will never crack or craze.

The proper gage of enameling steel is dependent on the end-use of the porcelain enamel, and the architect will be well advised not to specify a particular gage in advance—especially for large panels—but rather to decide in conference with the fabricator what the correct thickness should be.

It is also possible to decrease the thickness of the metal somewhat, and to reduce the danger of crowning and other distortions, by breaking the flatness of the sheet. This can be done by corrugating, fluting, or rigidizing. In most cases these techniques are resorted to not for purposes of economy or weight reduction, but rather for esthetic reasons, particularly since preforming the metal increases the cost. Perforating the steel also reduces or eliminates crowning, though it does not decrease the gage of metal required. However, if more than about 25 percent of the metal is removed by perforation, large panels may warp or curl when fired.

forming enameling steel

Sheets used for flat, smooth porcelain-enamel panels are often flanged on two or four sides before the enamel is applied. This provides a fastening surface for the panel. Occasionally, flat pieces without flanges are laminated and installed in channels.

Architectural porcelain enamel may be obtained in almost any building shape that the architect may specify, from one-piece window sills and stools to complete cornices, copings, and soffits, as well as even more complex forms. One of the most recent uses of the material in architecture is for three-dimensional murals, in which the metal is hammered into shapes or forms by the artist and is then fired with as brilliant an array of colors as he wishes.

porcelain enameling

Most porcelain-enamel sheets and shapes receive a base or ground coat, plus one or more finish coats. Both sides of the steel are coated, the back having about the same thickness as the front. If this were not done, the metal would curl and warp when fired. When the panel is to be laminated to a core material, a roughening agent is added to the back to assure a firm bond with the adhesives used in the laminating process.

Layers of enamel are kept as thin as possible, the controlling element being complete color continuity. The thinner the enamel coating, the greater the resistance to damage from mechanical shock. With modern technology, it is possible to keep the coatings from 5 to 10 mils in thickness, although certain types of high quality finishes, such as stippling, may run as high as 20 mils.

finishes

Single-color porcelain enamel comes in a variety of surface finishes, ranging from full gloss, registering between 70 and 75 on the Gardner Glossometer, down to the new acid-resistant full matte which registers no more than five. Many degrees of matte or gloss in between these limits can be obtained by varying the formulas of the enamels.

The material is also available, as it has been for years, in stipple or mottle finish. A stippled enamel is made by spattering enamels of the same color as the first color, or of one or more different colors, on the surface of the cover coat. Widely varying effects can be obtained by this technique.

An almost infinite variety of design or

* *President, The Bettinger Corporation, Waltham, Mass.*

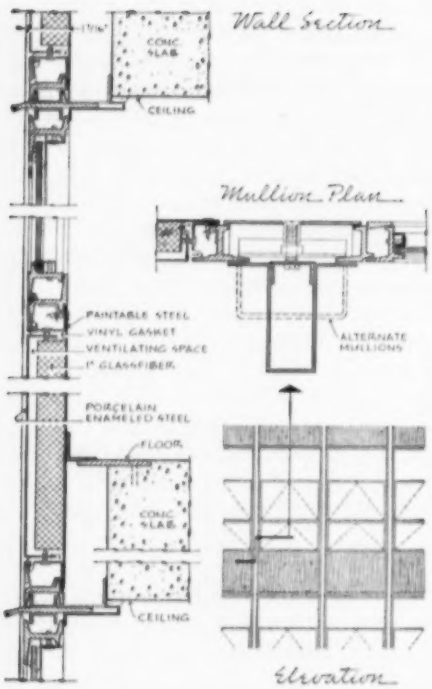


Figure 2—prefab window-wall details developed by Truscon Steel and The Bettinger Corporation. Spandrels have glass-fiber insulation.

pattern can be obtained in porcelain enamel by the use of stencils. The stenciling process can be used either for repetitive motifs at low cost, or, for individual works of art, at a cost limited only by the patience of the artist and the time available to him.

More recently, artists have begun designing directly in enamel for architectural purposes, exterior as well as interior. Doris Hall, Director of Architectural Art and Color at The Bettinger Corporation, and her husband, Kalman Kubinyi, have created porcelain-enamel murals of great distinction in this medium; and Gyorgy and Juliet Kepes have produced some brilliant abstract tiles and panels, working directly with the enamels without pattern or stencil.

colors

Porcelain enamel has always been rich in color and variety, as anyone knows who has studied medieval and Renaissance art objects using this medium. An even greater spectrum of colors is available to artists and architects in contemporary porcelain enamels, since modern research has developed so many new types of inorganic colors that can be used in enameling. Indeed, one of the constant companions of the up-to-date porcelain-enamel fabricator is the Ostwald Color Harmony Manual. Almost every one of the thousands of shades exhibited in that remarkable manual, except the metallic colors, can be matched in today's porcelain enamel.

panel types

Modern porcelain-enamel panels are available to architects in one of two basic types: the simple sheet panel, or "veneer," and the laminated panel of recent vintage.

(a) *Veneer.* This consists merely of the metal base and the porcelain-enamel finish. Until a few years ago this was the only way in which porcelain enamel could be obtained, and almost all of the structures using it up to 1951 consisted of veneer-enamel sheets fastened to wood or metal furring.

Of course, as has been made clear previously, veneer porcelain enamel can be obtained in almost any shape desired, in addition to flat panels. Among the more recent applications of veneer enamel are church spires, fireplace hoods, acoustical tiles, window stools, and so on. Corrugated porcelain-enamel roofing and siding sheets for industrial use have been on the market for many years and have proved to be indestructible and trouble-free in many an installation. Porcelain-enamel shingles for commercial and residential use are also available.

(b) *Laminated panels.* These come in two major types—insulating and noninsulating. The noninsulating panel usually consists of a porcelain-enamel facing laminated to a ⅛" to ¾" plywood core with a suitable adhesive. To the back of the plywood is laminated either an inner porcelain-enamel face or a metal backing suitable for painting or a base for a plywood, or gypsum board interior finish material. The metal backing is essential both for rigidity and for a vapor barrier. This laminated panel eliminates crowning completely. Aluminum honeycomb has been used as a core, but the cost of this material is, for the present at least, almost prohibitive for average applications.

The insulating panel is made up of a porcelain-enameled steel exterior face, a layer of insulating material, and an inner enameled-steel face or metal backing. The metal backing can, of course,

be painted and used as the interior finish itself. Insulating core materials may consist of various rigid insulating boards, organic or inorganic, or a paper honeycomb. Most of the organic insulating wallboards have two major disadvantages, at least from the point of view of use in a laminated panel. First, they will not pass many cities' fire tests. Second, they tend to delaminate because of their low tensile strength.

Probably the most effective insulating core material thus far developed is a paper honeycomb. This product consists of thousands of cells (roughly ¾″ in diameter) which run at right angles to the thin but strong paper skin that binds the material. The honeycomb paper may be obtained in thicknesses up to four inches. The best type is impregnated and coated with a portland cement compound that gives it a very good fire resistance. When the cells are filled with perlite the resistance is, of course, even greater; in this form the material has passed a standard, though unofficial, four-hour fire test. The honeycomb's thermal insulating value ranges from a U of 0.41 for a 1″ thickness without perlite to 0.09 for a 4″ thickness filled with perlite. These figures refer to the core alone; if a foil-backed gypsum plasterboard were used on the inside of the laminated panels for interior finish, the U factor would be still better.

Acoustically, a panel composed of a 1¼″ empty honeycomb core with sheets of ½″ gypsum board laminated on each side shows a decibel reduction of 34. If thicker and filled with perlite, the acoustical values would improve considerably.

A recent development in laminated panels is a mechanically assembled porcelain-enamel window wall (*Figure 2*). This wall, which was designed for a series of United Mine Workers hospitals in the South, provides a completely prefabricated unit for continuous window and curtain-wall installation. The panel again shows one of the innumerable ways whereby porcelain enamel in association with other building elements may be made to serve the endlessly varying requirements of the architect.

joints

Like any other metal-based sheets, porcelain-enamel panels in veneer or laminated form can be joined to each other by metal screws, bolts, splines (*Figure 3*), and by other methods. The joint space between the panels is calked by any of a variety of suitable materials, selection of which can be recommended by the fabricator, if the architect desires. They may be fastened to the structure by means of light-steel framing members, or may be set in upright slotted or channeled sections. The structural steel of the building itself may be used to secure the panels. Several of the illustrated details indicate possible methods of fastening panels, whether veneer or laminated.

conclusion

Today, architectural porcelain enamel must be considered an integral part of the building in which it is used. It is no longer merely a facing, to be applied more or less as an afterthought. In addition, every contemporary building has its own individuality and its own special problems. The alert enameler must be aware of these basic facts. With this in mind, architectural engineering services should be established to provide detail drawings, supervision of a porcelain-enamel installation, or actual contracting for the erection of the porcelain-enamel part of a job.

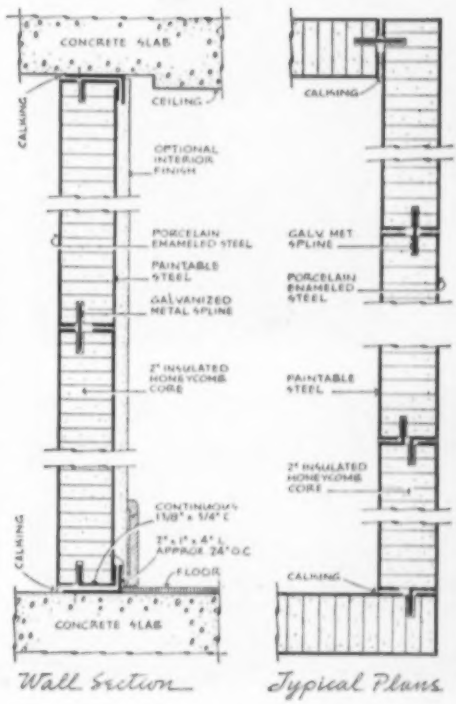


Figure 3—channel-fastening details (left) *and various jointing details* (right) *for insulated paper-honeycomb-core panels.*

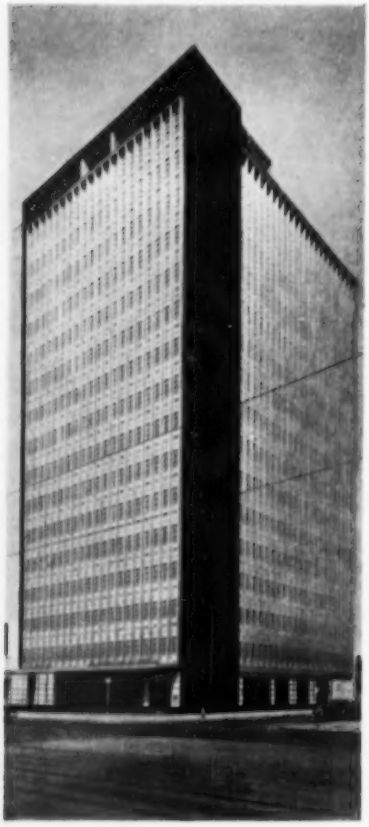


Figure 1—porcelain-enamel metal panels frame façades of aluminum-fin construction on Texaco Building, New Orleans, La. (top), *Claude E. Hooton, Architect.*

Photo: Chas. L. Franck

Figure 2—last model of Lustron House (did not get into production). Various types of porcelain-enamel panels were used throughout (bottom).

porcelain enamel resume

The contemporary architect, if he is worth his salt, is constantly searching for new materials and new applications for those already established. His criteria for using such materials will be their suitability for his purposes, their superiority from a performance aspect, their esthetic qualities, and their economy.

While there is nothing new about porcelain enamel as such, until recently its uses have been extremely limited in the architectural field, perhaps because it was not adequately developed from the architect's point of view. Nevertheless, a few interesting early examples of porcelain enamel used effectively in buildings have exemplified the material's major merits: durability, constant freshness and brilliance, low maintenance cost, and richly varied color.

The technical advances that have made porcelain enamel worth the modern architect's attention have been outlined in the preceding article. This discussion will report my firm's experience with the material, as well as that of a few other architects who have recently begun using it in some of their new buildings.

We have long been intrigued with the many possibilities of porcelain enamel, both as a functional and as a decorative material. As far as we can see, porcelain possesses most of the flexibility in application that paint does—plus the advantages of durability and longevity without maintenance. In particular as regards decoration, porcelain enamel offers a chance for art to reappear in architecture on a colorful, individual, and relatively inexpensive basis.

recent uses of porcelain enamel

Many indeed are the uses that architects have already found for porcelain enamel. Perhaps the most rapidly expanding application is the use of exterior and interior flat panels, either laminated to cores of various materials or unlaminated. These panels can be used for spandrels, copings, bulkheads, fascias, walls, partitions, counters, and ceilings. They may be plain or richly decorated with imaginative designs by modern artists, to whom the flexibility of the material, its unlimited color possibilities, and its equally unlimited durability offer both a challenge and a satisfaction. Challenge to their artistic imaginations; satisfaction in knowing that the product of their endeavor will endure for the life of the building.

In our own work, for example, we have used porcelain-enamel panels decoratively in the interior of the York National Bank, at Old Orchard Beach, Maine (*June 1953 P/A*), in the form of a brilliant mural design by Gyorgy Kepes. We are completing a similar interior, this time in porcelain-enamel tile, in the Tufts Library, Branch Building, Weymouth, Massachusetts (*January 1954 P/A*). Here porcelain enamel is used around the librarian's counter; the installation will also have ornamented areas designed and executed by Kepes. The outside of this building will have two 2½′ x 24′ bulkhead porcelain-enamel sections underneath windows, front and back of the building; these panels may be made of the new acid-resistant full-matte enamel described previously.

Artist-decorated porcelain enamel is also being used by other architectural groups. In the interior of the West Side Elementary School at Taunton, Massachusetts, designed by The Architects' Collaborative, there will be 25 Kepes-decorated panels from 3′ x 3′ to 3′ x 6′ in size. On the exterior there are to be nearly 350 spandrels in various pastel colors, all in full-matte finish.

Elsewhere in the country, porcelain enamel is also swiftly coming into general use in flat panel form for curtain walls. As far as we know, the enamels have thus far been plain, generally veneer, and for the most part, semigloss. For example, in the Standard Federal Savings and Loan

Porcelain Enamel in Contemporary Architecture

by Carl Koch*

Association Building in Los Angeles, Welton Becket and Associates have designed curtain walls 5/8" thick, consisting of a deep blue porcelain-enamel exterior, a thin aluminum honeycomb core, and an interior metal plate which is painted to serve as the interior wall surface (*March 1954 P/A*). And down in New Orleans, Claude E. Hooton is responsible for the new Texaco skyscraper (*Figure 1*), much of the exterior of which is clad in porcelain-enamel veneer.

Though one of the largest uses of the material, flat-panel porcelain enamel is far from being the only important one. Back in 1951, our firm worked for months on the design of a Lustron House (*Figure 2*) which would, we believe, have almost entirely answered consumer objections to the first model. Here porcelain enamel was to have been used throughout, in the form of flat, corrugated, and other types of panels. Unfortunately, this project came to a sudden stop when Lustron did.

Nevertheless, we feel that there is a large future for porcelain enamel in residential use, whether for complete houses or for separate elements. For example, in the near future we plan to offer as a substitute, in our Techbuilt Houses, porcelain-enamel panels for the painted plywood spandrels currently being used. The installed cost is reported to be little if any more than the plywood plus the insulation, the inner surfacing, and the paint; and the panel will be good for the life of the home.

Porcelain enamel also makes an ideal roofing material for homes and for public, commercial, and industrial buildings. A waffle-iron porcelain-enamel shingle was planned for the Lustron house. A remarkable use of the material for roofing can be found in the barrel roof of the kindergarten playroom of the Whiting Lane Elementary School, West Hartford, Connecticut—Moore & Salsbury, Architects (*Figure 3*). The use of cold-curved panels for this roof represents an extremely interesting development in light-panel construction. This building, incidentally, is using porcelain enamel in more ways than any other structure known to the writer. It is almost entirely clad with full-matte porcelain-enamel bulkheads, spandrels, fascias, soffits, and copings in varying pastel shades. On the inside, enamel is being used as a decorative element for lighting fixtures, ventilating louvers, and—perhaps for the first time anywhere—as an acoustical material. Perforated porcelain-enamel panels, backed with an inorganic sound-absorbing material, are used in the school auditorium, on parts of the walls and ceilings, and on parts of the dining room walls.

Another valuable use for porcelain enamel has been durable specialty work such as sunshades, hatches, and depositories. Considerable use of the material was made in the Fitchburg Youth Library (*December 1951 P/A*). The porcelain-enamel sunshade is particularly effective since it combines a light barrier with a high reflectivity of the sun's heat, due to the glossy top surfaces of the individual fins.

In the field of commercial signs, porcelain enamel has long had a bad name among architects. This is not, however, due to the nature of the material itself, but rather to the unesthetic designs which have been applied to it in the past. We have tried to use it in a more imaginative fashion as, for example, in our signs, murals, and store fixtures for the Radio Shack in Boston, the Regal Stores, and elsewhere.

Porcelain-enamel tiles have offered a number of effective applications. A well-made porcelain-enamel tile is equal to ceramic tiles in most interior locations. In the Techbuilt Houses, colorful 8" x 8" tiles have been scattered informally

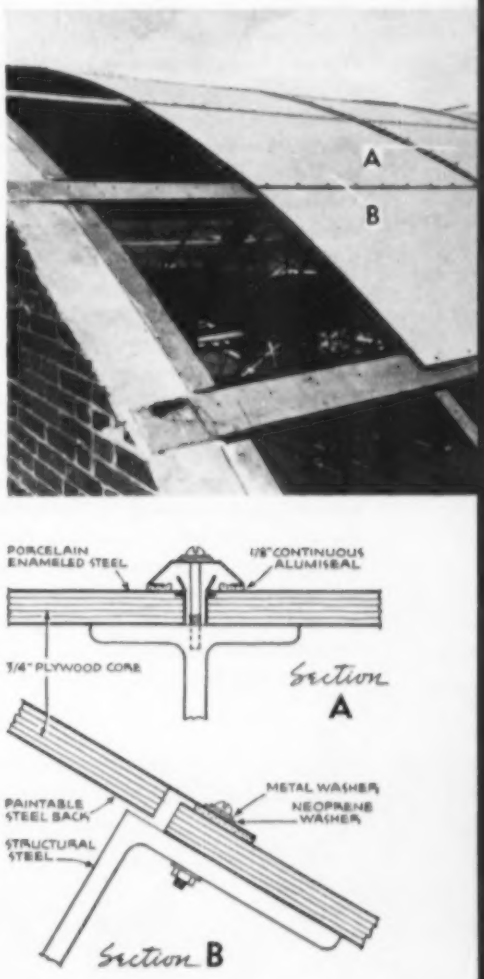


Figure 3—photo and details of barrel roof over kindergarten playroom at Whiting Lane Elementary School, West Hartford, Conn. The 4' x 6' panels were cold bent, 16 in a stack, by built-up plywood dies. Panels took their permanent shape (curved to a 23' radius) after subjected to 100 psf pressure for 12 to 15 hours. Slow-setting glue allowed panels to slide as required by the bending process.

Photo: Wren Studio

* *Carl Koch & Associates, Architects, Cambridge, Mass.*

among the plain tiles above the bathtub. These are brilliantly-colored abstract units designed by Kepes, to serve as a permanent accent on the bathroom walls (*Figure 4*).

An exterior application, perhaps the first such use of a porcelain-enamel tile, is found in several Techbuilt Houses, where some of the large ornamental and plain tiles were embedded in mortar on the face of the cement block chimneys. This made the ordinarily homely but inexpensive cinder-block chimneys both handsome and highly individual.

Already well publicized are the uses of porcelain enamel in the little Acorn fireplace and in our larger, individually designed fireplace hoods.

Lighting fixtures in porcelain enamel provide a durability and a permanently effective finish that cannot be duplicated by the usual baked-enamel surfaces. We have specified the material in our fixtures for the proposed Regal Store in Baltimore; Moore & Salsbury have also done so in their Whiting Lane Elementary School. We feel that this application can be much more widely exploited than it has been thus far.

Other uses to which the material can successfully be put include furniture, such as desk tops, decorative cabinets, room-dividing screens (perhaps in perforated sheets), chalkboard, and so on. Porcelain-enamel chalkboard, in what is familiarly known as "chlorophyll green," is swiftly supplanting the old and dismal slate blackboards of the schools of our youth (*April 1954 P/A*). Since the base material is steel, the sheet can also be used as a bulletin board with small magnets holding the pieces of paper to the surface.

One of the most interesting new uses of porcelain enamel is in sculpture. Currently in process of creation is a series of 12 huge signs of the zodiac, designed by Doris Hall and Kalman Kubinyi for several buildings on Michigan State University's new campus designed by Ralph Calder, Architect. Each of these porcelain-enamel sculptures will measure approximately 6′ x 10′, and will be made from eight to 10 separate pieces, all to be assembled and fastened permanently to the walls of the University's new buildings. These artists are working directly on the enameling steel in the Bettinger plants.

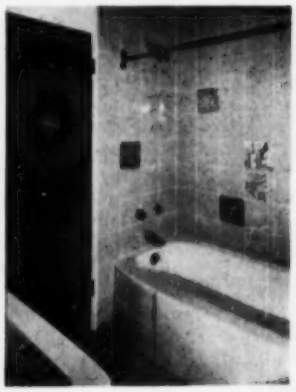
In our opinion, we have only begun to explore the innumerable possibilities of porcelain enamel in architecture. And it should always be borne in mind that the material usually is competitive with other less durable and less decorative materials. For example, we found that in the Techbuilt House, which is in the low-cost field, the porcelain-enamel tiles in the bathroom could be fitted into the budget, complete with Kepes-designed decorative elements, without any strain at all. Even when porcelain enamel is not entirely competitive from the point of view of original cost (although it can be if it is well integrated with the building and secondary savings are taken advantage of), it practically always becomes so when one considers its maintenance economy.

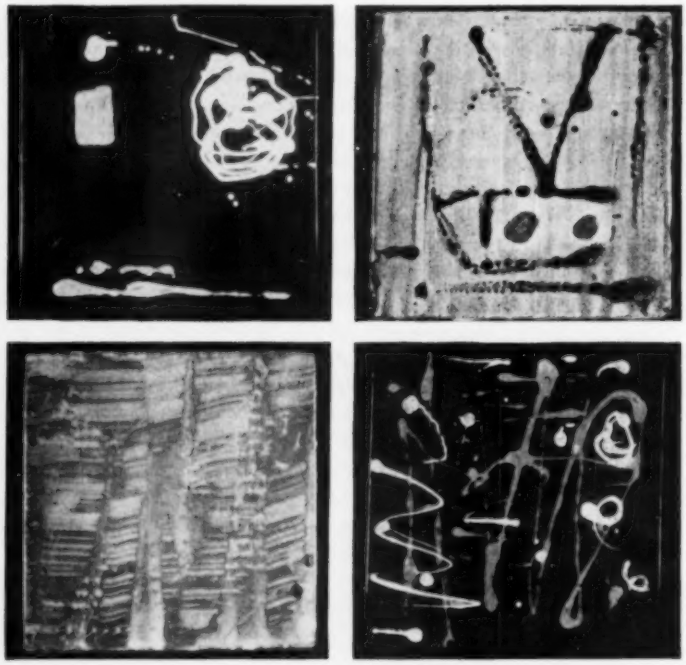
resume of new uses

Some of the new uses for porcelain enamel which either have been discussed or are actually in the process of development, include the following:

As a boxing for light structural mem-

Figure 4—porcelain-enamel wall tiles in bathroom of Techbuilt House. This kind of tile will not crack or craze as building settles or as tiles age.





Four abstract tile designs by Gyorgy Kepes (right); *actual size of tiles is 8″ x 8″.*

Photos: Ben Schnall; Fred Stone

bers. (You cannot enamel structural steel, but occasions may arise when heavy-gage enameling iron might be used to form such members.)

For caps for beams and trusses.

For complete framework for prefab window panels, including operating sash and either with or without spandrel sections.

For acoustical ceilings, to produce a surface that will never need painting and is easy to clean.

For the complete packaged bathroom or kitchen of tomorrow.

For colored stair risers and door kick plates in schools, etc.

For nonskid floors of ramps, stairs, and so on in public buildings. It is reported that by adding a high refractory abrasive to the porcelain, the result should be an almost everlasting, slip-proof surface.

Further development of its possibilities in the field of panel prefabrication, for residential, commercial, and industrial uses.

For all forms of ornamental works, railings, grill work, etc.

For specialty or stock items of hardware, for louvers, architectural screens, metal-clad doors, metal baseboards, drain pipes, gutters, and downspouts, and for innumerable other applications where a durable and colorful material can have a useful function.

final thoughts

My associates and I have been working with porcelain enamel long enough to have learned three basic "don'ts" about it, and we would like to pass them on.

First, do not try to make porcelain enamel imitate other materials. Why attempt to disguise a material that has so many outstanding individual characteristics of its own by trying to make it "look like" granite, or terra cotta, or what have you?

Second, do not expect absolute color and texture sameness from a series of porcelain-enamel panels, any more than you do from other materials. One does not insist that marble, granite, ceramic-glazed clay tile, brick, aluminum, stainless steel, etc., match absolutely—from piece to piece, or panel to panel—in color, reflectivity, or surface texture. Why demand that porcelain enamel do what these other materials cannot do? Such variations as occur will always be slight, and the over-all appearance of the panels when in place will be uniform enough for every reasonable purpose.

Third, and most important, do not try to specify the exact physical or artistic properties and components of a porcelain-enamel installation. Look to the progressive porcelain-enamel fabricator for design, engineering, and construction assistance. Of course, the curious-minded architect will gain inspiration from familiarizing himself with the merits, the performance qualities, and even the manufacturing procedures of the material in its various forms, but even then he will be well advised to look upon the architectural and engineering services of the genuinely up-to-date manufacturers as a sort of technical "branch office." Some enamelers have established such architectural, engineering, and construction service departments, manned by experts with imagination and with years of experience. These men are there to help the architect avoid mistakes, save money, develop new applications, and in general make the best possible use of architectural porcelain enamel.

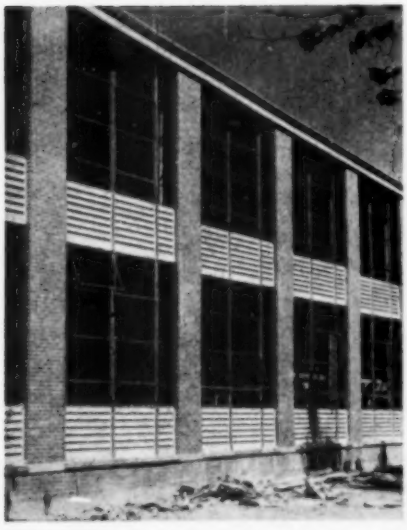


Figure 5—porcelain-enamel louvers cover spandrels of Lexington High School, Lexington, Mass. Perry, Shaw, Hepburn, Kehoe & Dean, Architects.

Figure 6—porcelain-enamel curtain-wall panels (approximately 3'-6" x 4'-3") with paper-honeycomb cores being installed in small office building.

Photos: Will Rapport
Lenscraft Photos, Inc.

Photo: Frank Lotz Miller

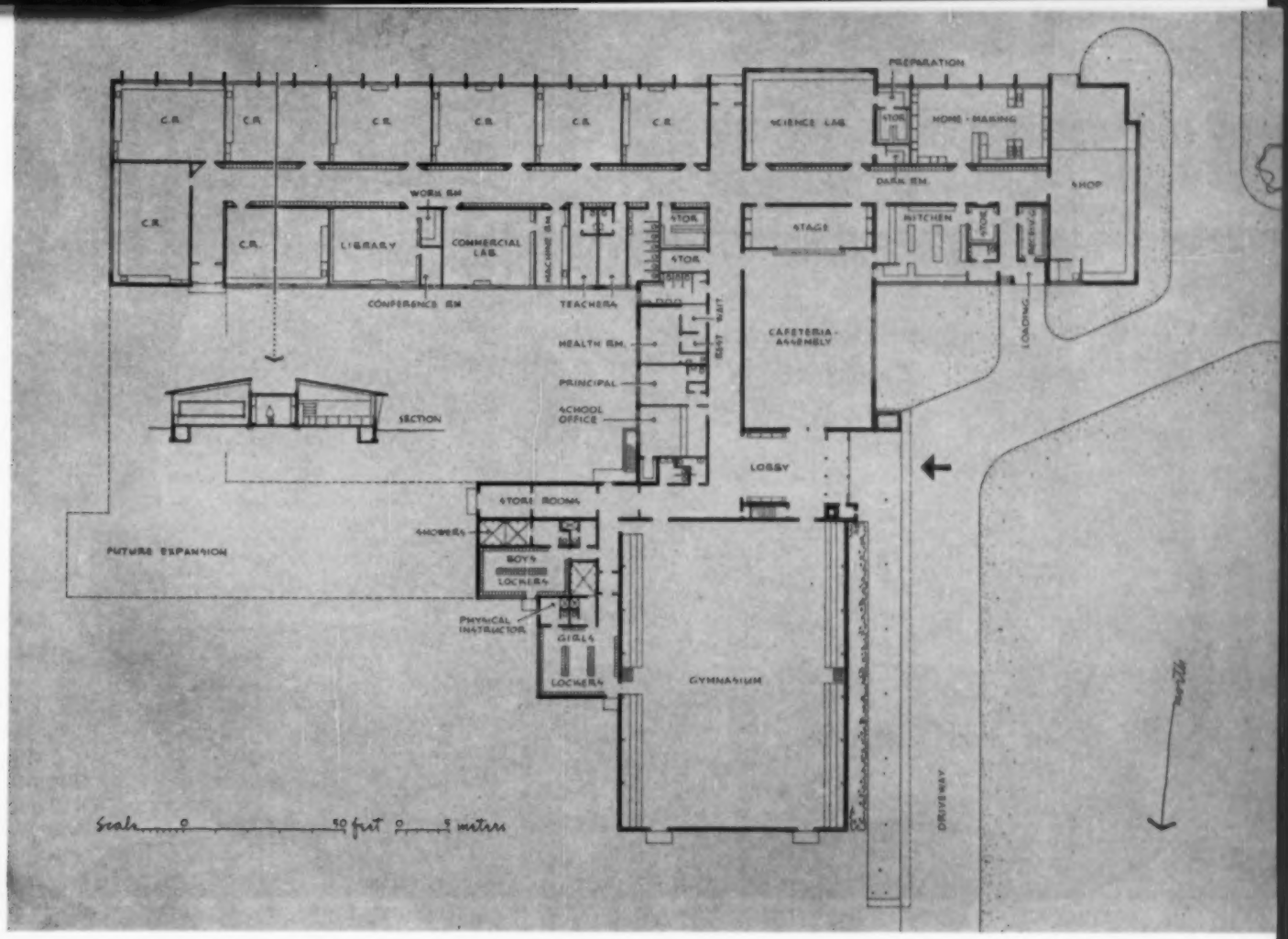
Schools come near the top of the list of building types in which it is important to make a judicious selection of materials—and to assemble these into efficient, economical buildings. For the country has pressing need for new schools of every type and local budgets make it essential that every penny count. Hence, in exploring the effect of materials on design, we focus on schools in which selection and use of materials are particularly thoughtful.

Steel rolled sections; pipe columns; glass; terra-cotta tile; and corrugated asbestos and plastic panels constitute the sun-and-weather-control elements of the south-facing wall of a two-story school (above left) *in Louisiana by Curtis & Davis, Architects, New Orleans.*

For analysis of economical materials in a Connecticut school (left), *see acrosspage.*

location	Clinton, Connecticut
architects	Nichols & Butterfield
structural engineers	Marchant & Minges
mechanical engineers	Leslie A. Hoffman Associates
general contractor	Feliz Buzzi & Son

high school



This is the only school building designed in its entirety by the late John E. Nichols, who as a state and private consultant influenced the design of hundreds of schools throughout New England and elsewhere.

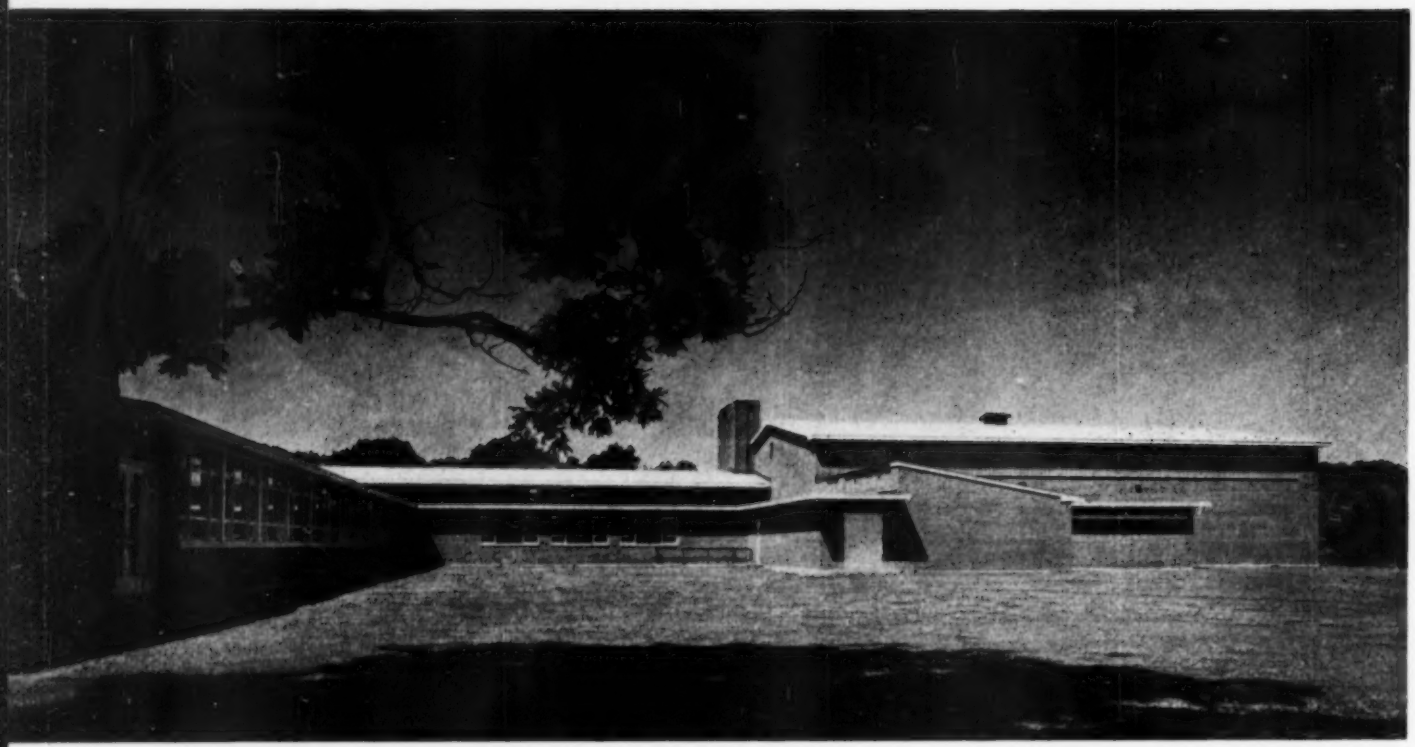
When this small high school was proposed to replace the old Morgan school in the center of town, the idea of the regional high school had not been generally accepted in Connecticut. Therefore the architect had to provide, in this 365-pupil school, facilities normally found only in much larger plants. Except for an auditorium (which was not necessary, since the Town Hall afforded excellent facilities) the school was required to provide for all high school activities. The stringent dictates of a very tight budget were offset by the willingness of the committee to accept a building in which structure and materials were integrated.

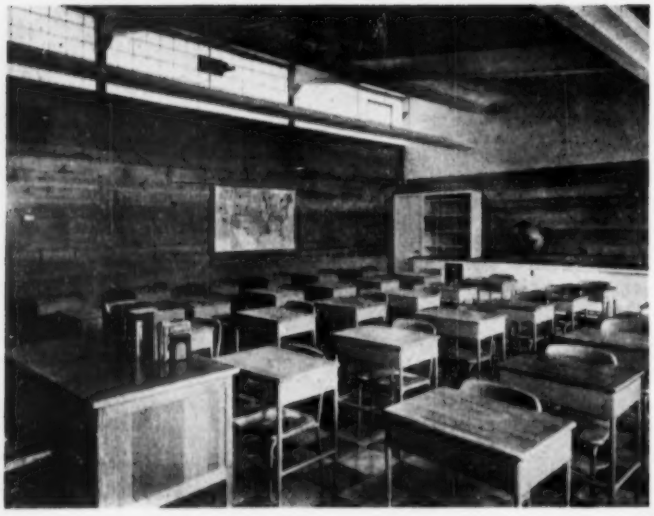
Nichols' choice, for example, of glass-fiber formboards to serve as (a) roof insulation, (b) acoustic treatment, (c) formwork for poured slab, illustrates his judicious use of materials. Other features contributing to lower cost are exposed cinder block and brick, simple mill-fabricated cabinets and native pine sheathing which provides endless tack surface and adds warmth to the rooms. In the corridors and restrooms, ceramic tiles provide a clean and indestructible surface. The use of directional glass block has proved entirely feasible even in the Connecticut climate.

Natural light is controlled by a wide roof overhang over the south classrooms and brick jib walls to minimize the effect of the low east and west sun. The clerestory panels of light-directing glass block contribute to the uniformity of the classroom lighting. Light-weight casement cloth on traverse rods controls the natural light but does not exclude it.

The owner wished to use black slate chalkboards, therefore the color of each "focal" wall surrounding the board was made relatively dark, to reduce the contrast, while other walls are lighter.

The Committee and the Superintendent of Schools pay tribute to Nichols' design solution, which held the ultimate cost of the building, with all built-in equipment, to $10.95 per square foot.





Pleasant patio (above) *may be completely enclosed when expansion becomes necessary. Classrooms are at left, offices at the far end, and gymnasium and locker rooms to the right.*

Typical classroom (left) *receives uniform light from light-directing glass block over central corridor, as well as large window on opposite wall. Artificial light is supplied by fluorescent egg-crate fixtures. The native-pine sheathing provides unlimited tack surface. Simple mill-fabricated cabinets were designed for each room. Heating is by means of low-pressure steam, with individual room controls.*

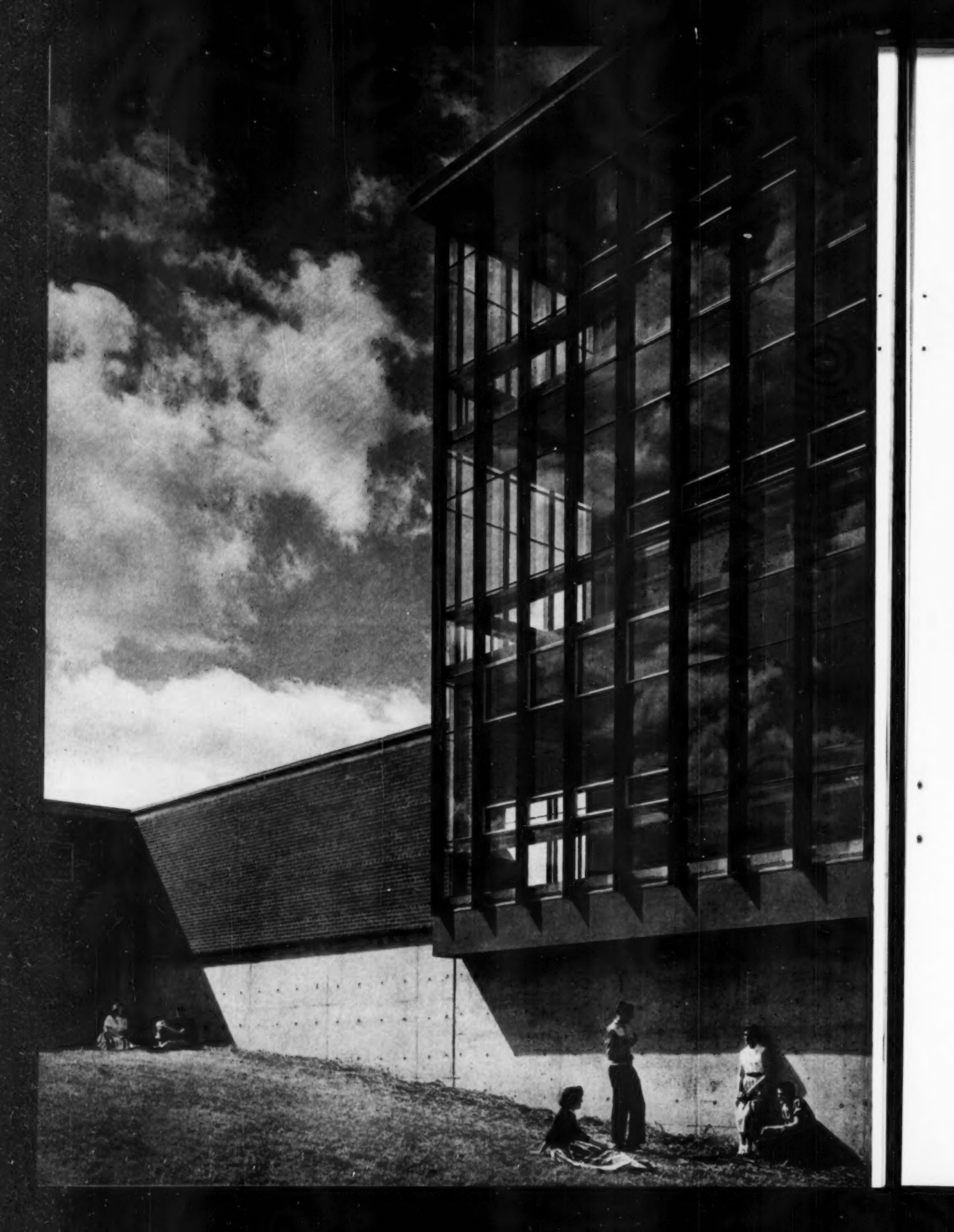
Library (below) *follows typical classroom pattern with ceiling of glass fiber formboard, exposed cinder block walls, and asphalt-tile flooring.*

Photos: Gottscho-Schleisner

Main entrance in foreground (above) *leads directly between gymnasium and assembly hall. Supplementary entrance diagonally opposite serves kitchen, shop, and home-making lab.*

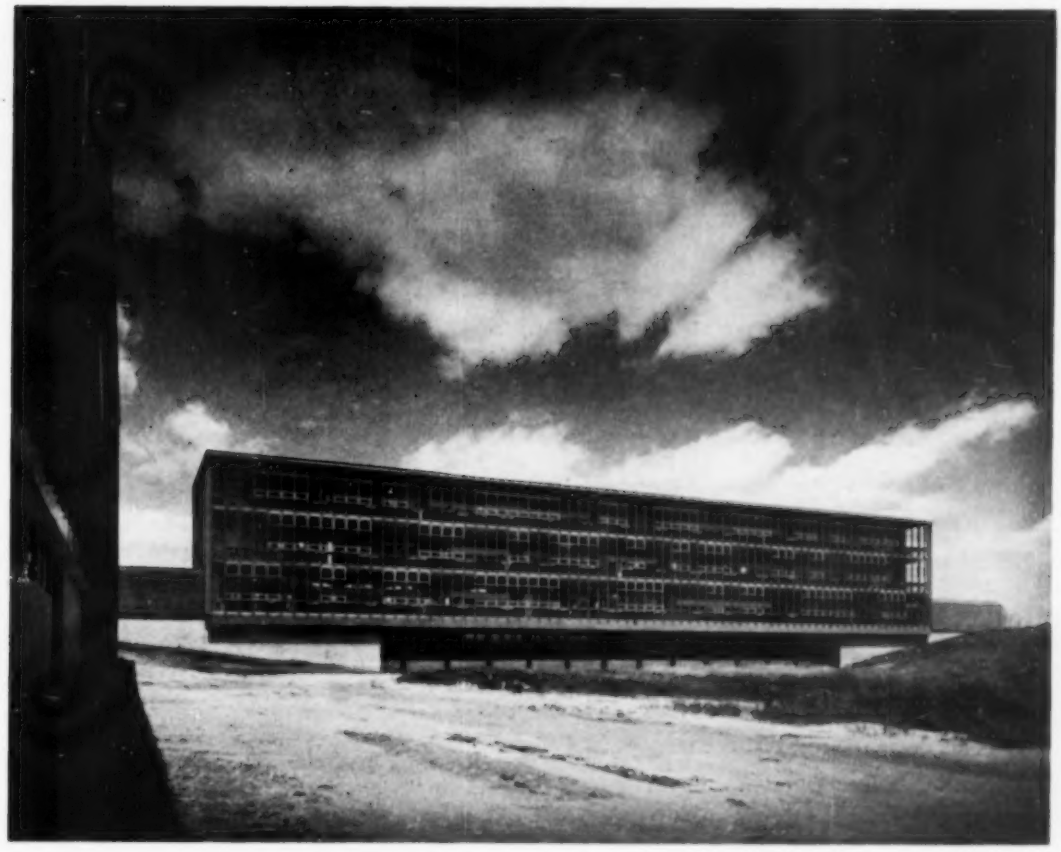
Roof deck for gymnasium (right) *consists of poured gypsum on glass-fiber formboards over rigid steel frame. Walls are exposed cinder block and pine sheathing.*

Canopy attached to gymnasium (below) *offers protection for unloading school buses. Exterior materials are brick, concrete, glass block and glass fixed in wood frames, with occasional operable wood sash.*

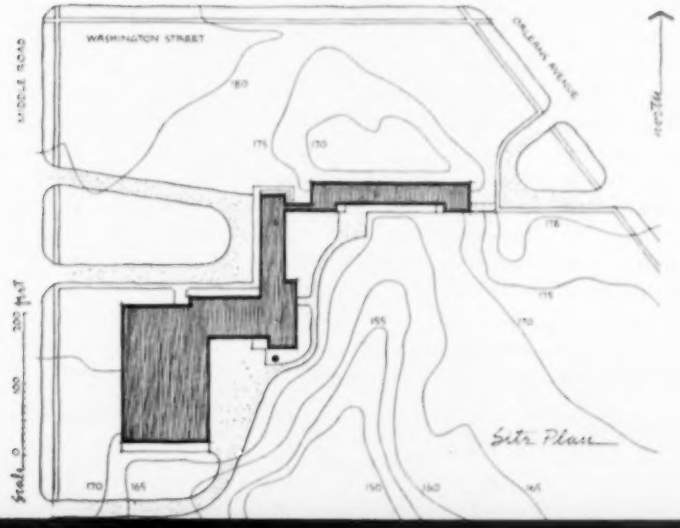


high school/community college

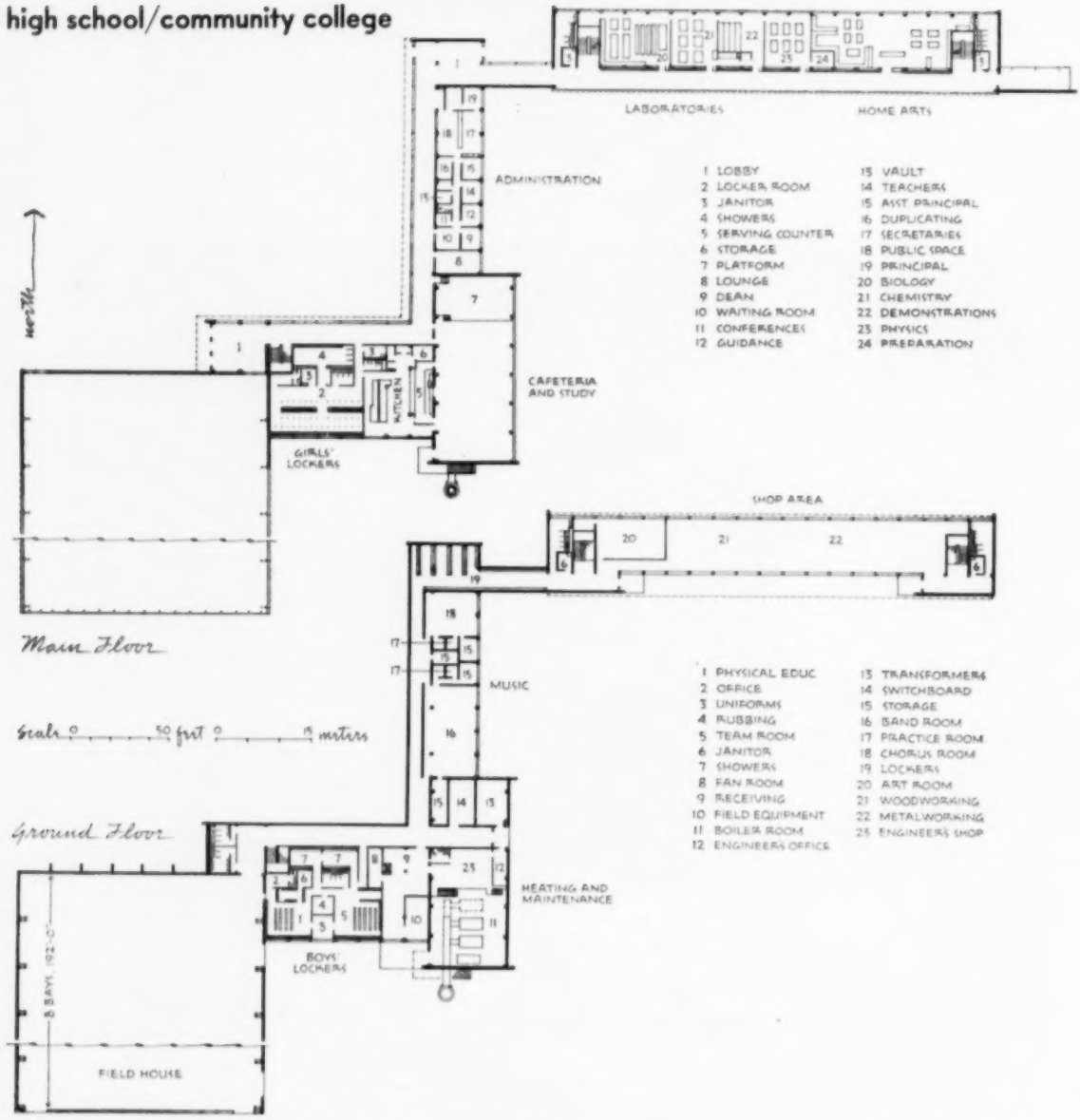
location	Keokuk, Iowa
architects-engineers	Perkins & Will
landscape design	William A. Dean, William E. Rose, Robert W. Mudre
general contractor	Lovejoy Construction Company



Outstanding in this remarkable school is the brilliant organization of materials—steel, glass, concrete, brick. The classroom wing (below) *spans a ravine that bisects the 25-acre property. The cantilevered, south window wall* (across page) *borders classroom corridors.*



high school/community college

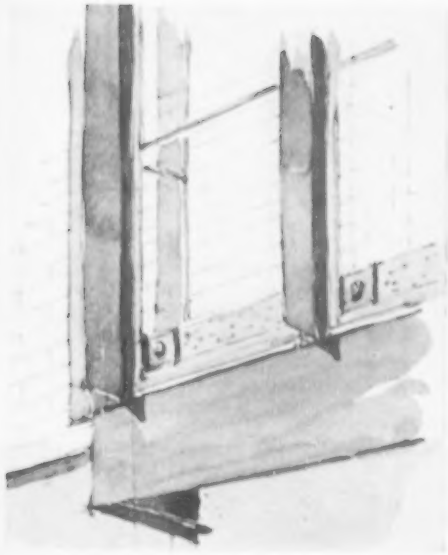


The Keokuk Senior High School and Community College is currently used in three ways—by students, as a high school; by the community, for shop and music classes; and by graduates, for special courses. Future units include a school library, to be built near the main entrance, and a special-shops unit, planned for the east end of the complex. Eventually, the school will serve both as a three-year high school and as a two-year junior college.

Three related elements constitute the present structure—the multistory classroom block, spanning the ravine; an L-shape administrative-cafeteria wing; and the gym-field house, at the southwest end of the group. Thus, administration is centrally located, and classrooms are separated from athletics, services, and other noisy activities.

The scheme developed for providing bilateral lighting for north-facing classrooms in a multistory structure is perhaps the most notable feature of the entire design. The reinforced-concrete structure uses an identical beam-and-slab system for all floors. Organized in 12-ft-wide bays, there are two rows of columns—one along the north wall; the other 28 ft south, in the line of the inner walls of classrooms. Two bays comprise the standard 24′ x 28′ classroom. A 12′-2″ cantilever from the south row of columns provides corridors along the entire southern front of the block. These are enclosed by an over-all steel-framed wall of glass (*see* ARCHITECT'S DETAILS). Only separation between corridors and classrooms is a 7′-6″-high partition, composed of lockers on the corridor side and tackboard in the rooms. The 3′-6″ space above is open, providing (with the glass north wall) high-level bilateral lighting and natural ventilation through the building. This has also proved satisfactory acoustically. No direct sun ever enters the rooms.

The two upper floors of the multistory block *(not shown)* contain classrooms for general studies and business education.



Tapered ends of the cantilevered beams that support the "boat deck" corridors (left) *form an orderly pattern along the ceiling.*

The 3" x 6" exterior vertical tees of the window-wall frame (above) *were made by splitting 12" junior I beams.*

The corridors command a serene view across athletic fields, Keokuk, and the Mississippi River Valley (below).

Water-color sketch: C. W. Brubaker

Rigid steel bents frame the field house (below). *V-shaped purlins, supported on the girder separating the frames, continue out to form a central butterfly roof and provide clerestories for daylighting the interior. Eventually roll-out bleachers will provide seating for nearly 4000.*

Photos: Reynolds, Photography, Inc.

Materials & Methods

The standard classroom (top photo) occupies two of the 12' x 28' bays. Other rooms, such as the home-arts unit (bottom), use as many as seven. Partitions are non-loading-bearing, 4-in. concrete block. Room air is conditioned by unit ventilators.

construction

Foundation, frame, floors, walls, roof: foundation: compacted fill under concrete slabs; frame: structural steel and reinforced concrete: concrete — Universal Atlas Cement Company, reinforcing steel—Laclede Steel Company, structural steel—Johnson Machine Works; concrete floors, ceramic floor tile; poured-gypsum concrete, tar and gravel roof: gypsum concrete — United States Gypsum Company. **Wall surfacing:** exterior: face brick—Adel Clay Products, glass; interior: concrete block, glazed tile—Arketex Ceramic Corporation. **Floor surfacing:** asphalt tile, rubber tile (stairs)—Armstrong Cork Company, hard maple on mastic (field house), ceramic tile in washrooms. **Ceiling surfacing:** lath and plaster. **Waterproofing and dampproofing:** 2-ply bitumen-saturated cotton fabric mopped to masonry asphalt primer. **Insulation:** acoustical: perforated vegetable-fiber insulation on plastic board base—Celotex Corporation: thermal: rockwool blanket — Johns-Manville Corporation. **Roof drainage:** copper and galvanized-steel gutters and downspouts; cast-iron drains. **Partitions:** interior: concrete block, glazed tile, wood. **Windows:** steel sash—Ceco Steel Products Corporation; polished plate, wire, tempered, drawn, and structural glass. **Doors:** birch veneer, hollow-core interior doors; overhead doors—Overhead Door Corporation. **Hardware:** bronze cylindrical lock sets—The Schlage Lock Company; door closers—LCN Closers, Inc.; door stops—Glynn-Johnson Corporation; rolling door hardware—New Castle Products; panic exit — Vonnegut Hardware Company, Von Duprin Division. **Paint:** exterior and interior—The Sherwin-Williams Company.

equipment

Kitchen: steamer — Cleveland Range Company; steam kettle—Groen Manufacturing Company; refrigerator—Herrick Refrigerator Company; ranges, ovens, fryer—Magic Chef, Inc.; mixer—Hobart Manufacturing Company; peeler, dishwasher—Toledo Scale Company; cold storage refrigerator—Frigidaire Division, General Motors Corporation. **Public address:** The Rauland Corporation. **Lighting fixtures:** office, corridors—Solar Light Manufacturing Company; shops, boiler room — Benjamin Electric Manufacturing Company; display cases—Gotham Lighting Corporation; classroom area—Harry Nabut; stairs—General Lighting Company; exit signs, suspended reflectors (field house)—Hub Electric Company; exterior wall fixtures—Holophane Company, Inc.; sidewalk lights—Revere Electric Manufacturing Company. **Electrical distribution:** 3-phase service entrance switch; underfloor duct wiring; panelboards—Trumbull Electric Department of General Electric Company; copper bars and conduit; generating plant—Union Electric Products Company. **Plumbing and sanitation:** lavatories, water closets, laundry tub—Crane Company; storage-type water heater—Kewanee Boiler Corporation; hot-water circulating pump—Bell & Gossett Company; water system pumps — Chicago Pump Company; air compressor — Quincy Compressor Company; shower cabinets — Crane Company; shower controls—The Powers Regulator Company. **Heating:** low-pressure steam boiler—Kewanee Boiler Corporation; gas burners—Mettler Company, Inc.; convectors, unit heaters—The Trane Company; unit ventilators—Herman Nelson Division, American Air Filter Company, Inc.; controls—Minneapolis-Honeywell Regulator Company; finned-tube radiators—Kritzer Radiant Coils, Inc. **Air conditioning:** diffusers — Tuttle & Bailey, Inc.; heaters—The Trane Company.

prototype elementary school

Architects: The Architects Collaborative. **Partners:** Jean and Norman Fletcher, Walter Gropius, John and Sarah Harkness, Robert McMillan, Louis A. McMillen, Benjamin Thompson. **Associates:** Chester Nagel, Richard Morehouse.

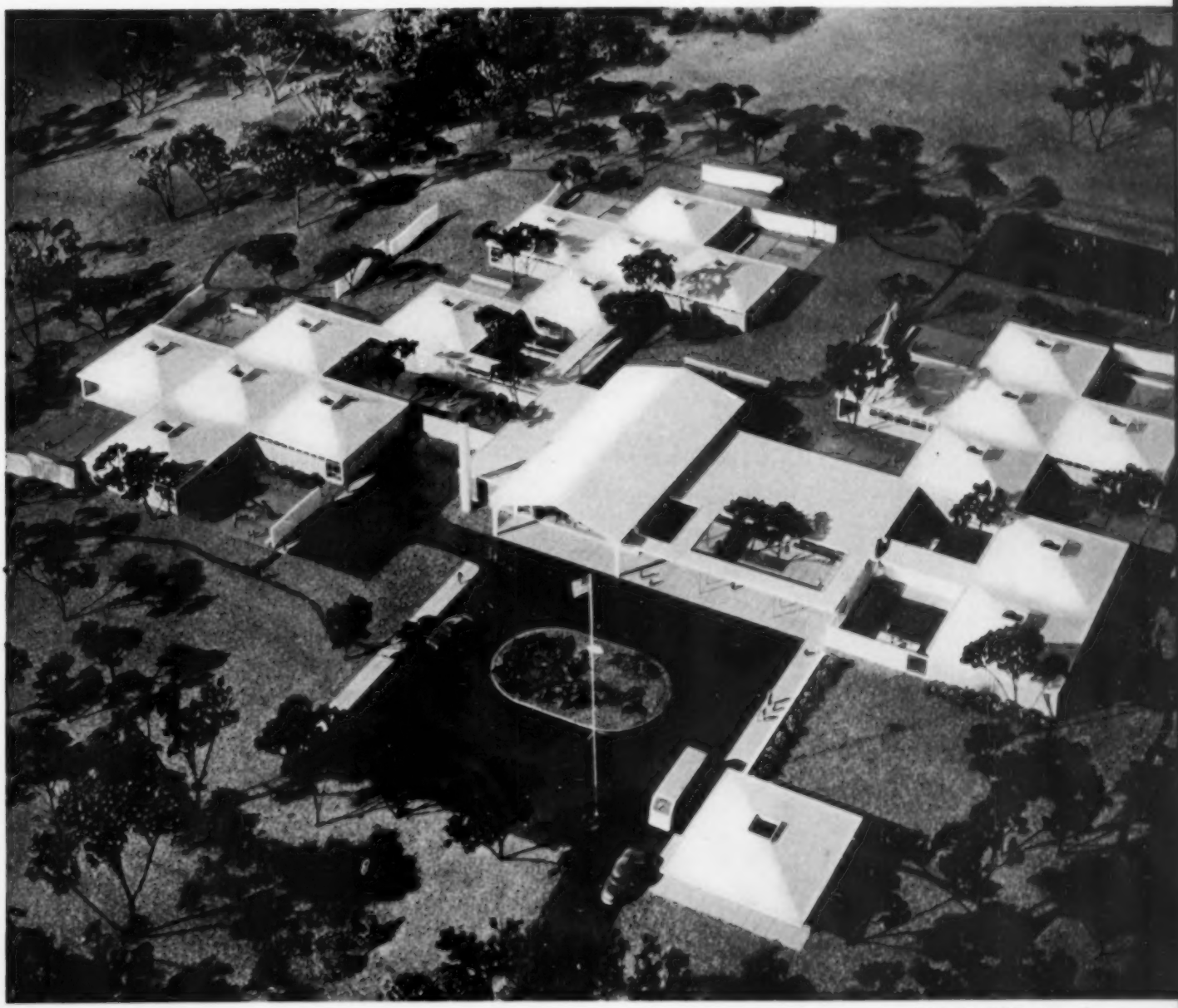


Photo: Louis Checkman

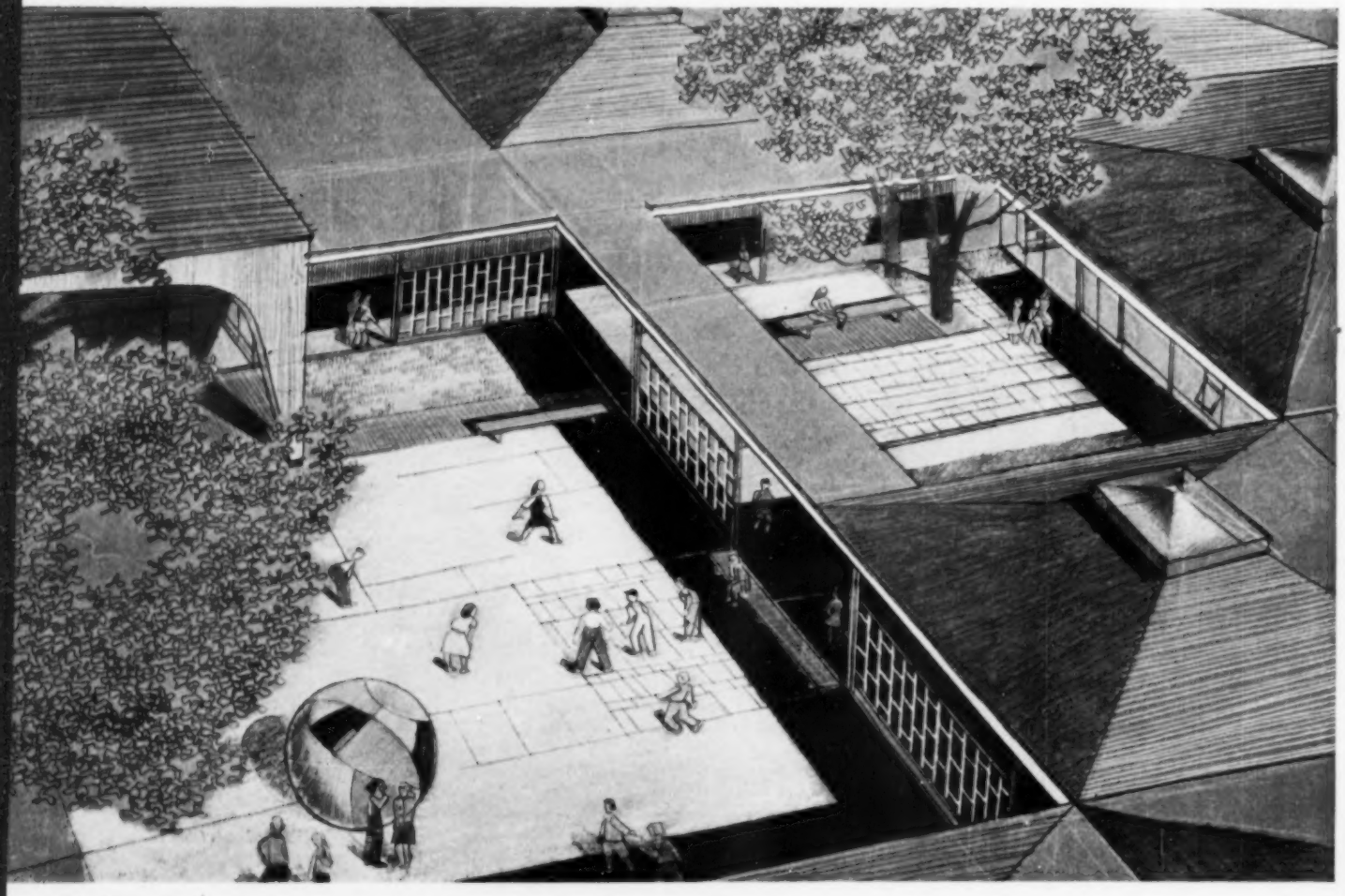
prototype elementary school

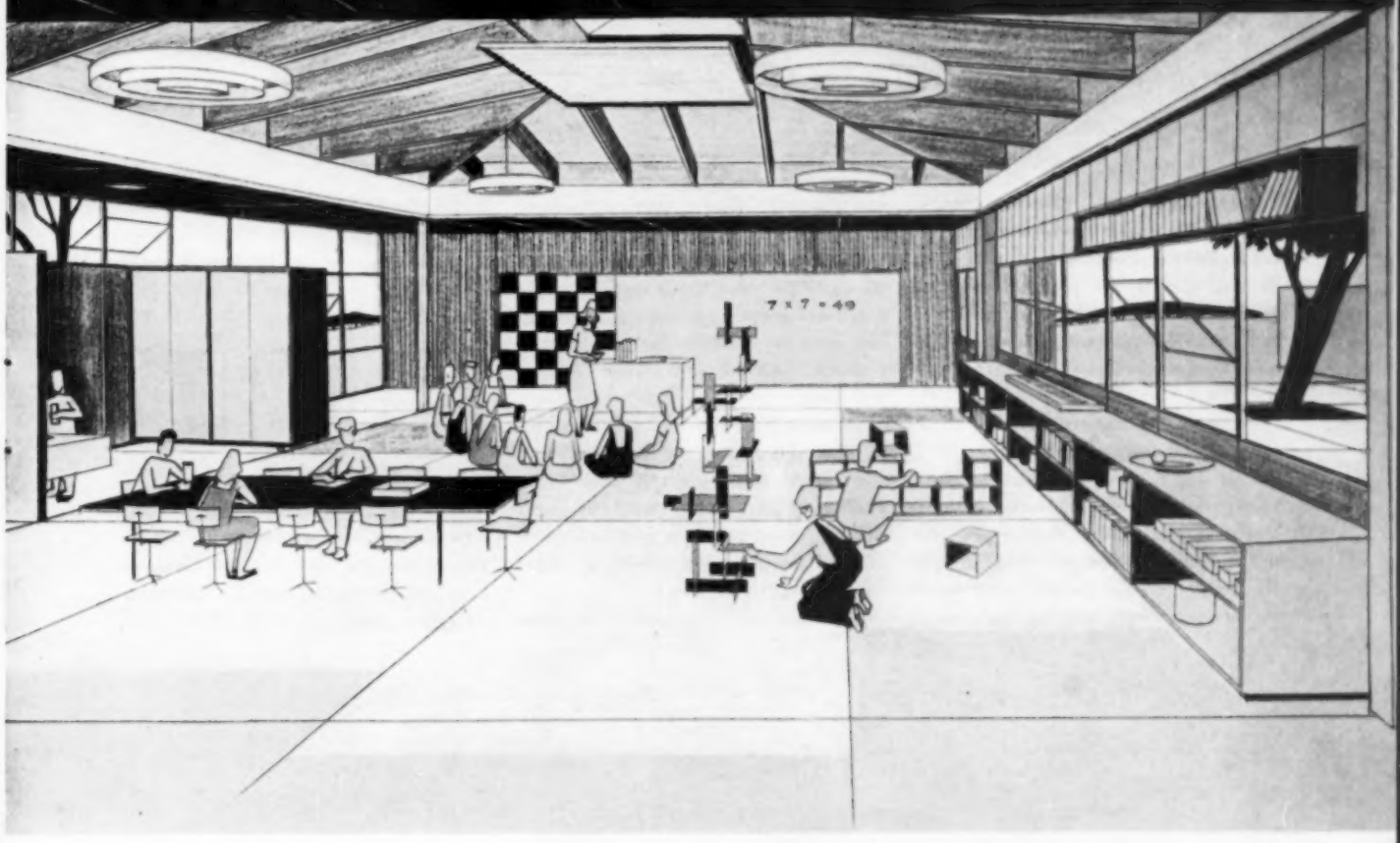
A heartening aid in solving the problem of providing urgently needed new schools is the increasing number of articles about contemporary school architecture in magazines of general circulation. One of the best and most informative—"You Can Build a Better School House," by Sey Chassler — appeared in *Collier's* last spring.

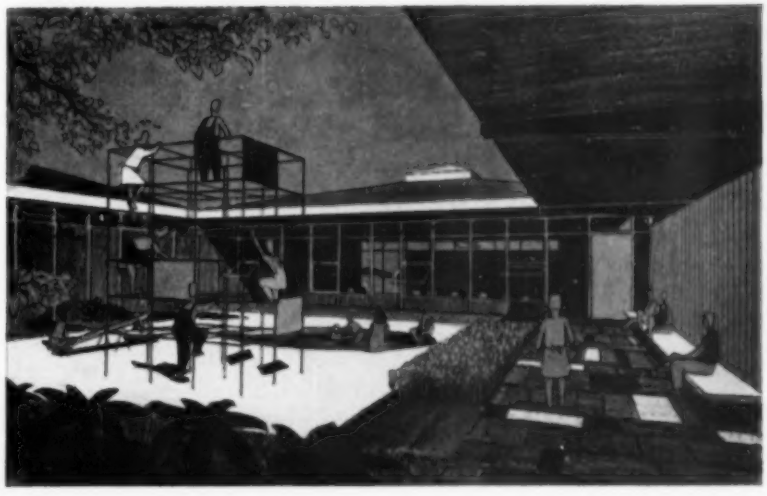
In an effort to help its readers solve their local school problems, *Collier's* commissioned The Architects Collaborative to design a prototype school (*model photo, page 127*) that would be economical to build and flexible enough in concept so that its elements could be adapted to practically any site.

Educational consultants for the project were Cyril G. Sargent and Donald P. Mitchell, director and associate director, respectively, of the Center for Field Studies of the Harvard Graduate School of Education.

The so-called cluster plan that TAC developed seems an excellent solution to the problem, since the plan is flexible in every sense. The typical units, consisting of four classrooms (*like the one shown acrosspage*), grouped around a central play area (*below*) may be joined in numberless arrangements, depending on the particular site and orientation conditions. The units adapt themselves to schools of almost any size, allowing for growth with minimum difficulty.







One of the typical play areas (right) *adjoining each classroom.*

Multipurpose room (below)—*the only special structure beside the administration wing, in the school project—is used as a gymnasium, rainy-day play area, auditorium, or for adult meetings in the evening.*

Drawings: The Architects Collaborative

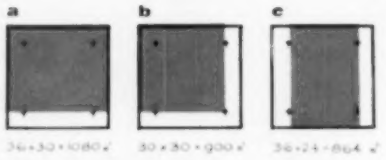
The drawings (*below*) show the progressive development of the cluster idea and the architects' experimentation with basic shapes. The square plan, in the final analysis, proved to be the most feasible and workable. Variations of the square plan (*lower left*) indicate the many possibilities of arrangement.

As these preliminary sketches show, each cluster originally incorporated a central unit to serve as an interior passageway for intercommunication between classrooms. This unit further acquired the function of a "common room" for the cluster, where all of the 120 pupils based in the classrooms forming the cluster could assemble for recreational, study, or other purposes.

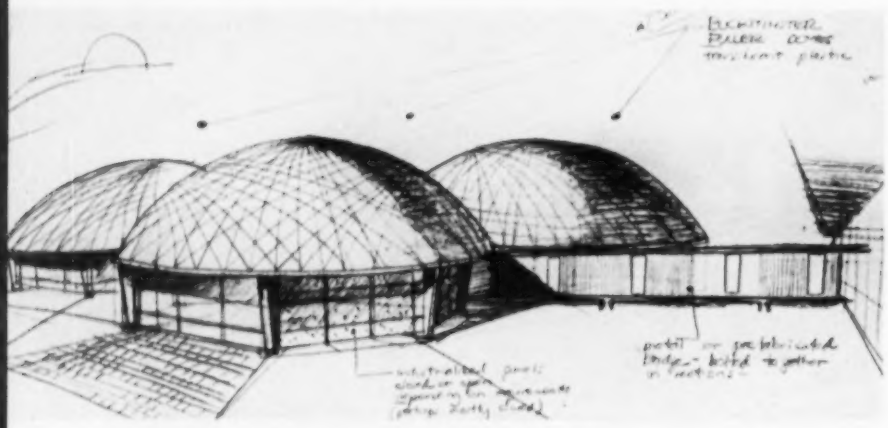
Perfected plans (*bottom acrosspage*) illustrate the great flexibility with which a four-classroom unit and its "common" can grow to whatever size is eventually required, without disrupting existing buildings.

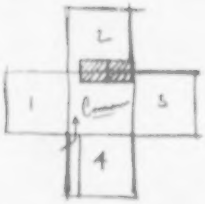
To explain the fundamental theory behind the cluster-plan, the architects state: "The basic idea is not a plan but a building system, whose module is larger than the usual panel—a plan unit 36′ x 36′. Furthermore, not merely a square but interrelated squares."

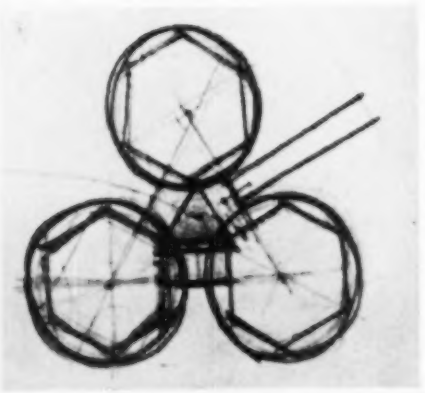
Thus size and arrangement of classroom is flexible with space for toilets, services, corridors at any point of the perimeter of the basic 36′ square. The total

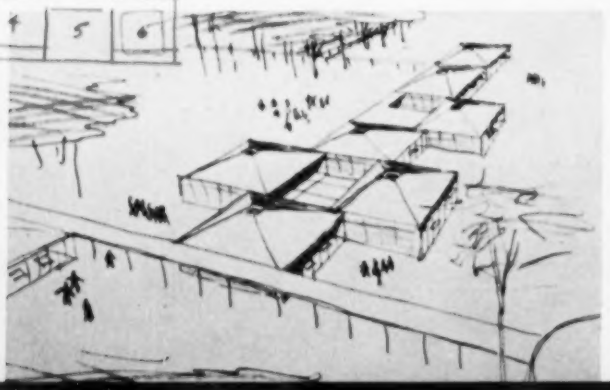


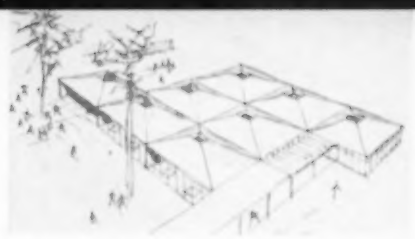
area of the square is 1296 sq ft of which any portion (shaded area in diagrams a, b, and c) may be used for the actual classroom space.











Plan and section on this page show the final stage in the development of this basic unit of which the entire project is composed—except for the large multi-purpose room (used as gymnasium, auditorium, and community center) and an administration building.

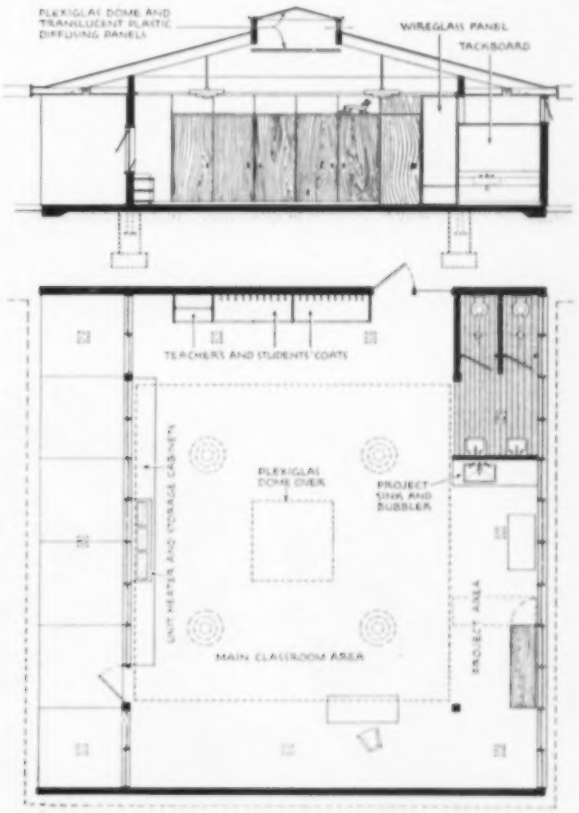
The basic structure consists of four square steel columns which support the laminated wood beams. The columns are embedded in concrete footings at the corners of a 24′ square. The roof, made up of lightweight, prefabricated, and insulated sections, forms a cantilever over the basic 36′ square.

Since the walls are nonstructural, materials can be economical, prefabricated, and varied. On the following page is the architects' list of materials which are particularly suited for this type of construction.

For lighting during the daytime, classrooms and "commons" have both normal windows and a plastic skylight with light-diffusing shield to illuminate the whole area evenly. Each classroom has its own ventilation fan as part of the skylight unit, its own washroom, toilet, and drinking fountain. Wardrobes and storage cabinets are prefabricated and may be placed to form partitions of classrooms.

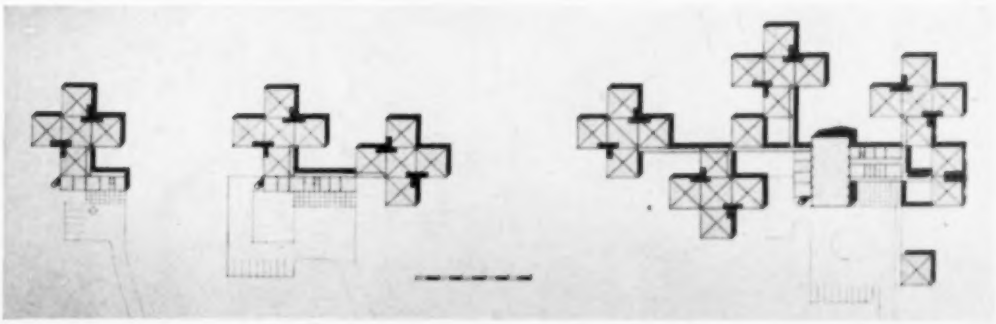
No exact estimate of the cost of such a school can be made since conditions vary in every part of the country. However, studies indicate that in New England, where construction costs are high, a four-classroom school with "common," administrative facilities, and all utilities would cost approximately $100,000, exclusive of land. The same school in a southern community could be built for considerably less.

The architects emphasize, however, that beyond the considerable economies implicit in the design, the primary aim was to provide young children with a good school building with facilities best suited to meet modern educational needs.



Plan and section (right) *illustrate the basic structure but actual classroom layout and choice of materials may vary within this framework.*

Plans (below) *show how one cluster, consisting of four classrooms, one "common," and an administrative wing, could be added to without disrupting existing buildings.*



prototype elementary school

Except for the basic structural materials, most of the materials suggested here are interchangeable to suit specific requirements.

structural materials

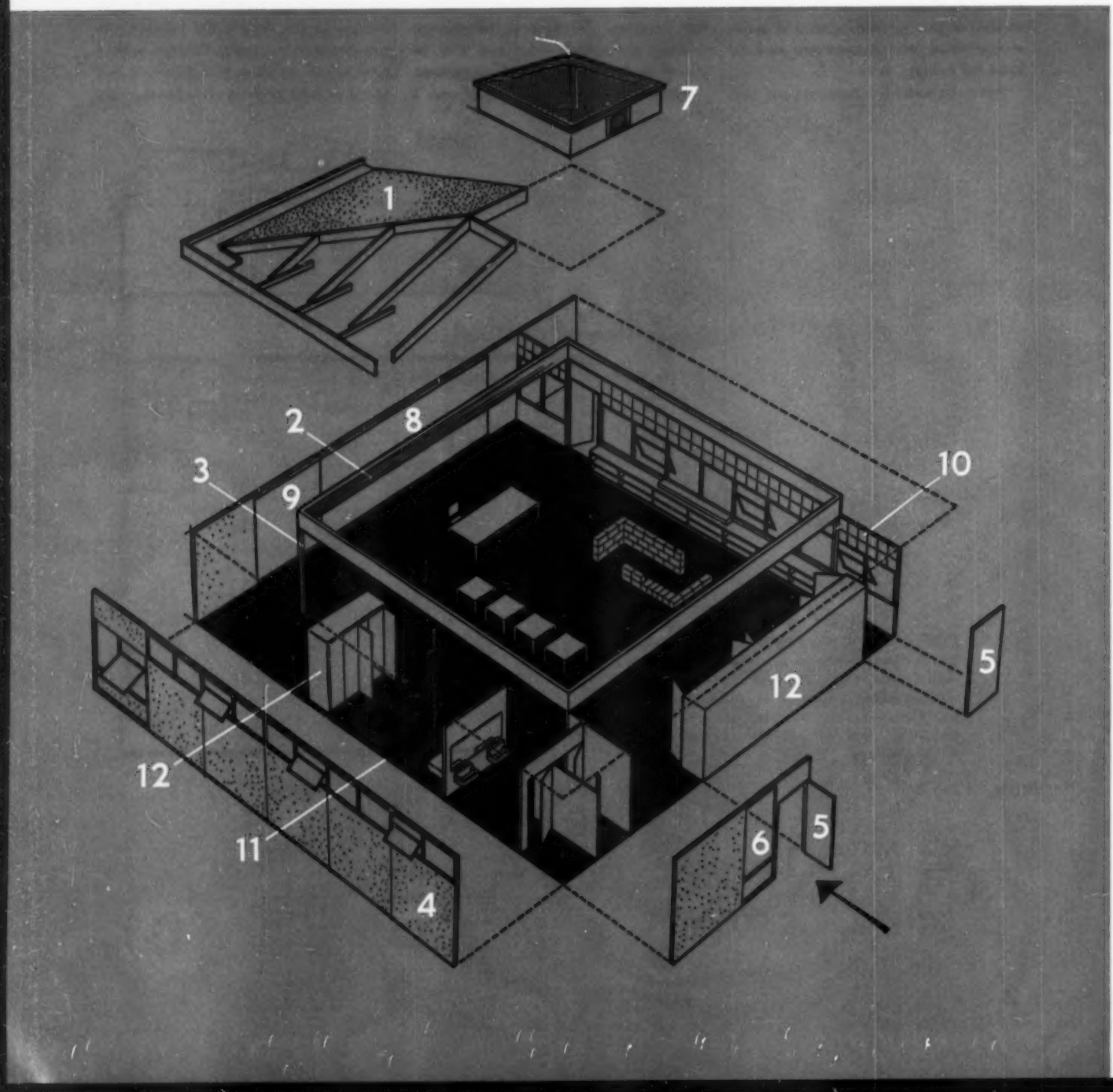
1. Stressed skin roof sections prefabricated of plywood, topped with tar and gravel.
2. Continuous laminated wood beam.
3. Square steel columns embedded in footings.

exterior materials

4. Wall materials: insulated plywood panels, cement asbestos panels, plastic or aluminum panels, laminated porcelain enamel panels.
5. Wood door panels.
6. Fixed wire-glass panel.
7. Plastic skylight dome with translucent plastic diffusing shield and unit ventilator.

interior materials

8. Chalk board (floor to ceiling): porcelain enamel, plastic, slate.
9. Tack board: cork, wood, fiberboard.
10. Acoustic tile.
11. Flooring: asphalt tile, linoleum, rubber tile, cork tile, vinyl tile, vinyl-cork tile.
12. Prefabricated plywood storage units.



elementary school

location	Millbrae, California
architects	John Lyon Reid & Partners
mechanical engineers	Coddington Co.
acoustical engineer	Dariel Fitzroy
general contractor	Wilfred H. May

In contrast to the use of a multiplicity of new and unusual materials, this school is chiefly distinguished by the well-balanced juxtaposition of a limited number of materials.

Photographer Sturtevant compares this school to the smart young suburban housewife who knows how to dress well by choosing the simplest basic garment. She will not adorn herself with applied ornament but accent the basic costume with bold and consistent accessories. As Sturtevant states it, "The 'mode' is the form and the redwood siding. The 'accessories' are the big windows of the special rooms, placed to balance each other in the total design, giving punches of strong verticals against dominant horizontals. Obviously the 'perky hat' is the entrance canopy and clear-glazed baffle wall."

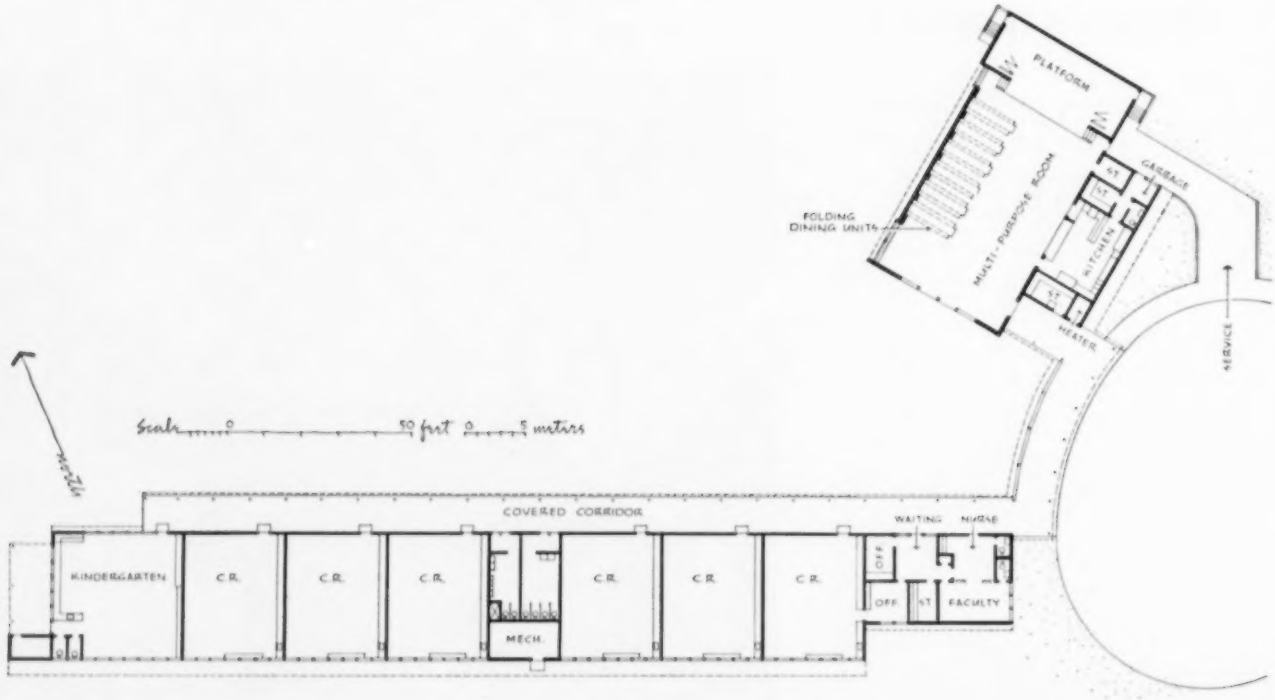
This distinguished little school was financed through the State Building Aid Program and therefore subject to many restrictions.

The basic area of 14,850 sq ft designated by the State of California had to be adhered to in the design of the six classrooms, kindergarten, administration area, multiuse room, toilets, storage and mechanical facilities.

The two main parts of the building complex—the classroom wing and the multiuse room—enclose a playground at the interior of the site. Toward the street, a covered corridor links the two elements and at the same time provides a sheltered school bus unloading area (*photo overpage*) with a glazed wind screen.

Due to restrictions placed on the use of steel during the Korean war, the structural system is almost entirely of wood.

Excluding site development, the cost of this well-planned school was $12.71 per square foot.



The wood split-ring trusses of the multiuse room (above) *span 40'-0" and are 12'-0" on center. Perforated and plain tiles insulate the ceiling panel acoustically. Recessed fixtures and lighting coves bordering the ceiling panel provide illumination. Heating is by forced-air system. Redwood siding and, for sound absorption, perforated hardboard cover the walls, while wood block forms the floor surface.*

View from playground (above right) *shows multiuse room at left, connected by a covered corridor to classroom wing at right. Exterior wall material is redwood siding throughout. Window near the floor is tempered plate glass to protect against breakage.*

In the classroom (below right) *a continuous exposed wood truss with steel tie rods extends along the clerestory windows in order to transfer lateral earthquake stresses from the roof to the columns. The light from these clerestory windows is controlled by exterior aluminum louvers. Artificial light is supplied by concentric ring incandescent fixtures. Radiant-floor-panel heating serves the classrooms. Plywood acoustical tiles and asphalt tiles are the major materials.*

Photos: Roger Sturtevant

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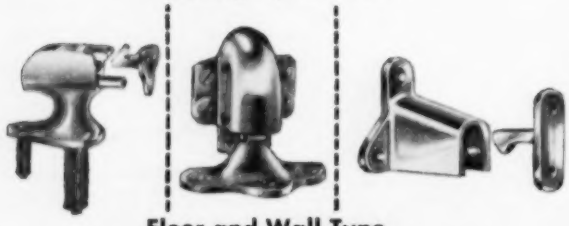

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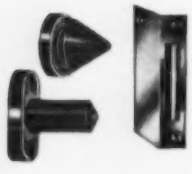

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spec small talk

glassplexity

It is quite possible that you may remember my efforts, some months back, to clarify who-makes-what in resilient flooring. Like a good little ferret, I now bring you long-awaited shatterproof news regarding some glassy confusion. Now listen carefully, for there *will* be questions later. Here is a clear view of Owens-Illinois, Libbey-Owens-Ford Glass Co., Owens-Corning Fiberglas Corp., Pittsburgh Corning Corporation, Pittsburgh Plate Glass Company, and Glass Fibers, Inc. E. D. Libbey founded Libbey Glass Co. (Toledo, 1888). E. Ford, son of Capt. John Ford who had helped found "Pittsburgh Plate" (Creighton, Pa., 1883), founded Edward Ford Plate Glass Co. (Toledo, 1898). M. J. Owens (Libbey's superintendent) invented the glass-bottle-making machine and (with Libbey's backing) founded Owens Bottle Machine Co. Owens' brainchild in flat-glass production produced another mutual effort with Libbey: the Libbey-Owens Sheet Glass Co., which merged (1930) with Edward Ford Plate Glass Co. to form Libbey-Owens-Ford Glass Co. See? Meanwhile, Owens Bottle (Machine) Co. acquired Illinois Glass Co. (1929) and became Owens-Illinois Glass Co. Owens-Illinois bought (1935) Libbey Glass Co. which became Libbey Div. of O.-I. In 1937, Corning (N. Y.) and "Pittsburgh Plate" formed Pittsburgh Corning Corp. (Pittsburgh, Pa.) to make glass block and expanded-cell insulation. Owens-Illinois and Corning Glass Works, Inc. (Corning, N. Y.) formed Owens-Corning Corp. (Toledo, 1938) to make Fiberglas products. R. H. Barnard formed Glass Fibers, Inc. (Toledo, 1944) to make glass fibers his own damn way. L-O-F added confusion by creating Fiber-Glass Div. (Toledo, 1951) also to make fibrous glass. Production of fibrous glass was begun by "Pittsburgh Plate" the following year (Shelbyville, Ind.) and in 1954 the company was producing a different type of fiber glass at Hicksville, N. Y. These glass companies, many with similar-sounding names, have *no connection* with each other. To sum up:

OWENS-ILLINOIS. *Glass Container Div.*—"Duraglas" (containers); *Closure and Plastics Div.*—subdivision of Glass Container Div. (metal and plastic closures, other plastic products); *Pacific Coast Div.*—does in West what Glass Container Div. does in East; *Libbey Glass Div.*—descendant of Libbey Glass Co. (glass tumblers, stemware, tableware); *Kimble Glass Co.* (pressed, blown, drawn glassware); *Nonglass Units.*—Kaylo Div. makes fireproof insulating material; Glasco Products Co. (Chicago) distributes certain products of Kimble Glass Co.; another subsidiary, Owens-Illinois Plywood Co., sells hardwood veneer, plywood, lumber-core panels.

LIBBEY-OWENS-FORD GLASS CO.—Twin-ground polished-plate glass, "Vitrolite" (structural glass), bent glass, "Tuf-flex" (tempered glass), "Thermopane" insulating glass, safety glass, and window glass. L-O-F sells (this will kill you!) patterned and wire glass made by Blue Ridge Glass Corp.; *Liberty Mirror Div.* (formerly Liberty Mirror Works)—automobile mirrors, "Mirropane" (transparent mirror), front-surface mirrors, vacuum-coated glass parts, coated optical and electronic elements; *Fiber-Glass Div.*—"Super-Fine" (blanket-type fiber glass), twisted and plied yarns, plastic reinforcements; *Corrulux Div.*—glass-fiber reinforced-plastic panels.

OWENS-CORNING FIBERGLAS CORP. *General Products Div.*—air filters, thermal insulation, sound control products, mats, clothing interliner; *Textile Products Div.*—Fiberglas filament and staple-fiber textile yarns for electrical insulations, plastic reinforcements, industrial papers, tapes and rubber, in combination with gypsum for wallboard, with vinyl for insect screening; *Pacific Coast Div.*—Fiberglas Engineering and Supply Co. (subsidiary company) handles industrial and sound control products in the West.

PITTSBURGH CORNING CORPORATION—PC glass blocks and "Foamglas" cellular-glass insulation for buildings, pipes, and many industrial uses.

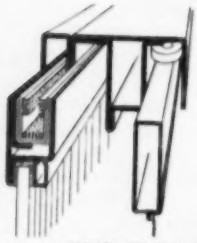
PITTSBURGH PLATE GLASS COMPANY. *Glass Div.*—plate glass, "Carrara" (structural glass), bent glass, "Herculite" (tempered glass). "Pittsburgh Plate" sells special patterned glass made by Mississippi Glass Co.; *Fiber Glass Div.*—"Superfine" (blanket-type fiber glass) for automobiles, duct insulation, house-trailers, also continuous-glass filament for yarns and plastic reinforcements, special furnace filters; *Paint Div.*—"Selectron" plastic for fiber-glass laminating and impregnating.

GLASS-FIBERS, INC. *Textile Products Div.*—yarns for electrical insulation, plastic reinforcements, fabrics; *Mat Products Div.*—underground-pipe wraps, mats, vapor barriers, liner materials; *General Products Div.*—"Microlite" (glass-fiber insulation), "Vitron" (glass micro-fibers filter medium, electrical insulation, laminating reinforcement), "Vibraglass" (glass-fiber material to absorb shock, vibration, and for packaging); *Western Div.*—glass-wool blankets for thermal and acoustical insulation of aircraft, insulation for jet-plane tail pipes, afterburners.

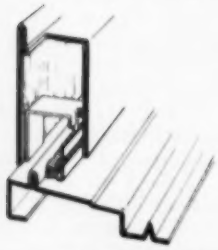
There, I have said in 663 words what any windbag would say in 223!

Avery Adhesive Label Corp. executive offices
George Vernon Russell, Architect, A.I.A.

NEW IMPROVED WEATHERSTRIPPING DEVELOPED FOR ARCADIA DOORS



HEAD OF DOOR is weathertight with mohair pile that provides continuous weatherseal protection in top channel guide of door.



SILL WEATHERSTRIPPING is weathertight with new mohair pile feature. Weatherstripping is adjustable for continuous weathertight seal.

national member of Producers' Council, Inc. Distributors located in Canada, Puerto Rico and all parts of the United States.

Since November 1952, Arcadia Metal Products has featured mohair pile weatherstripping in the top channel guide of the sliding section of the door. Success of this feature, introduced first in the sliding door industry by Arcadia engineers, led Arcadia to develop a similar weatherstripping for the sill. Shown here is the new mohair weatherstripping for the bottom rail of the door and other Arcadia standard weatherstripping details. Arcadia doors are weathertight!

Architects and engineers are enthusiastic about adjustable feature of new mohair weatherstripping in bottom rail of door at sill. By means of a new spring-steel retaining clip, Arcadia engineers have devised a method for easy adjustment of weatherstripping to assure a continuous weathertight seal in all Arcadia installations. Write for complete details.

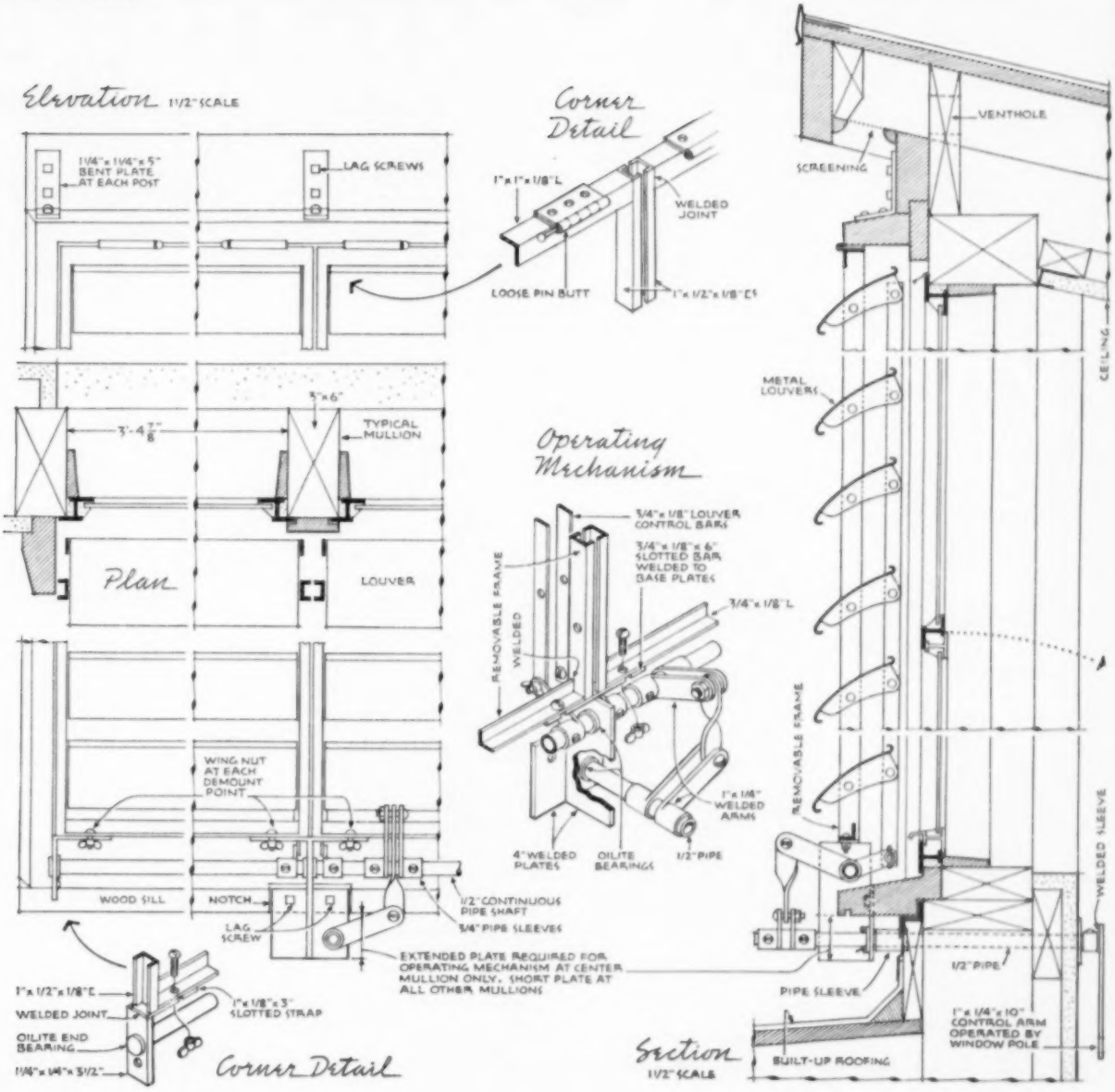
Specify Arcadia steel-framed sliding glass doors when you want weathertight installations – units for single glazing or double glazing. Stock and custom sizes.

arcadia metal products

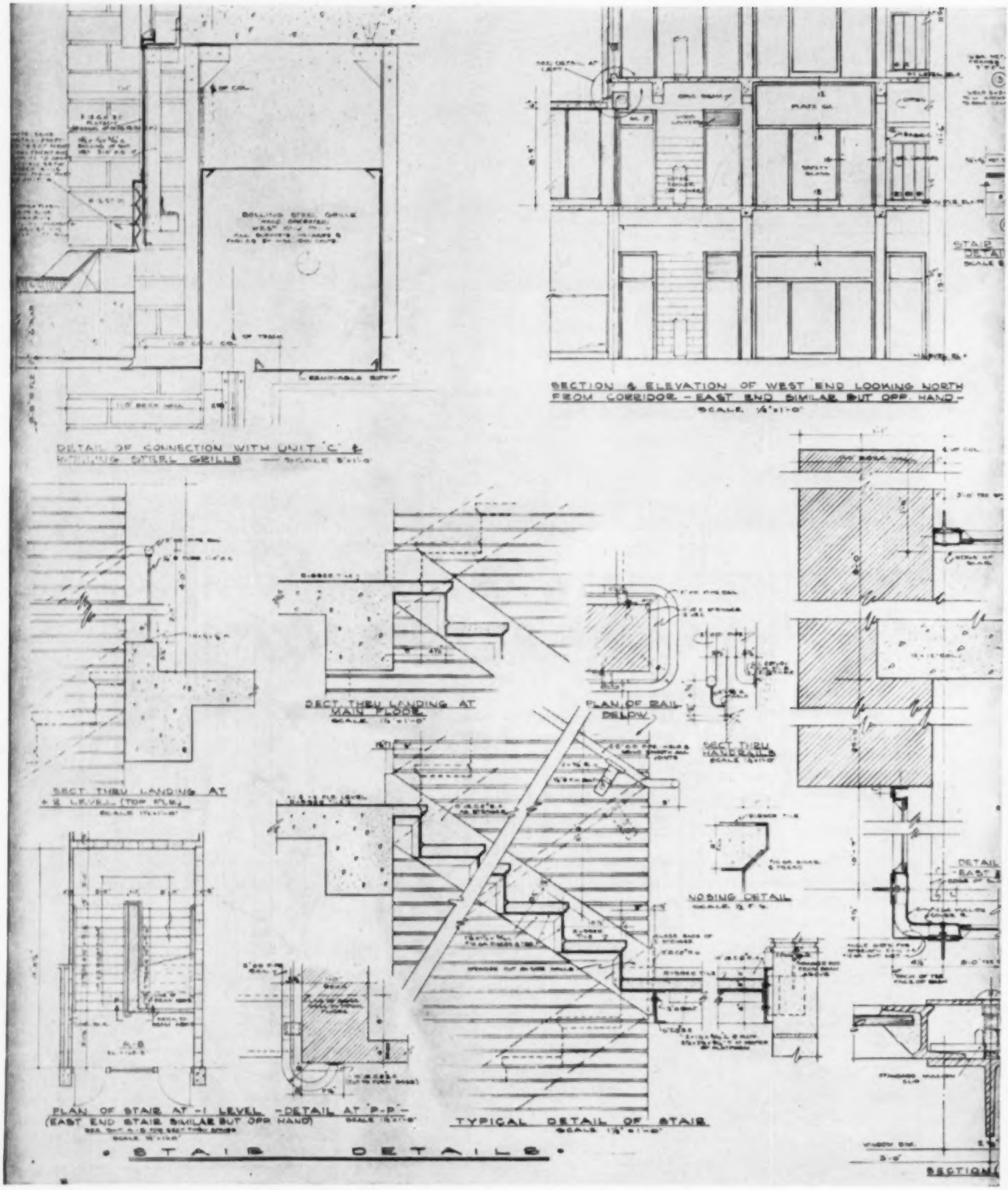
324 NORTH SECOND AVENUE, ARCADIA, CALIFORNIA

adjustable louvered windows

JULIUS SHULMAN

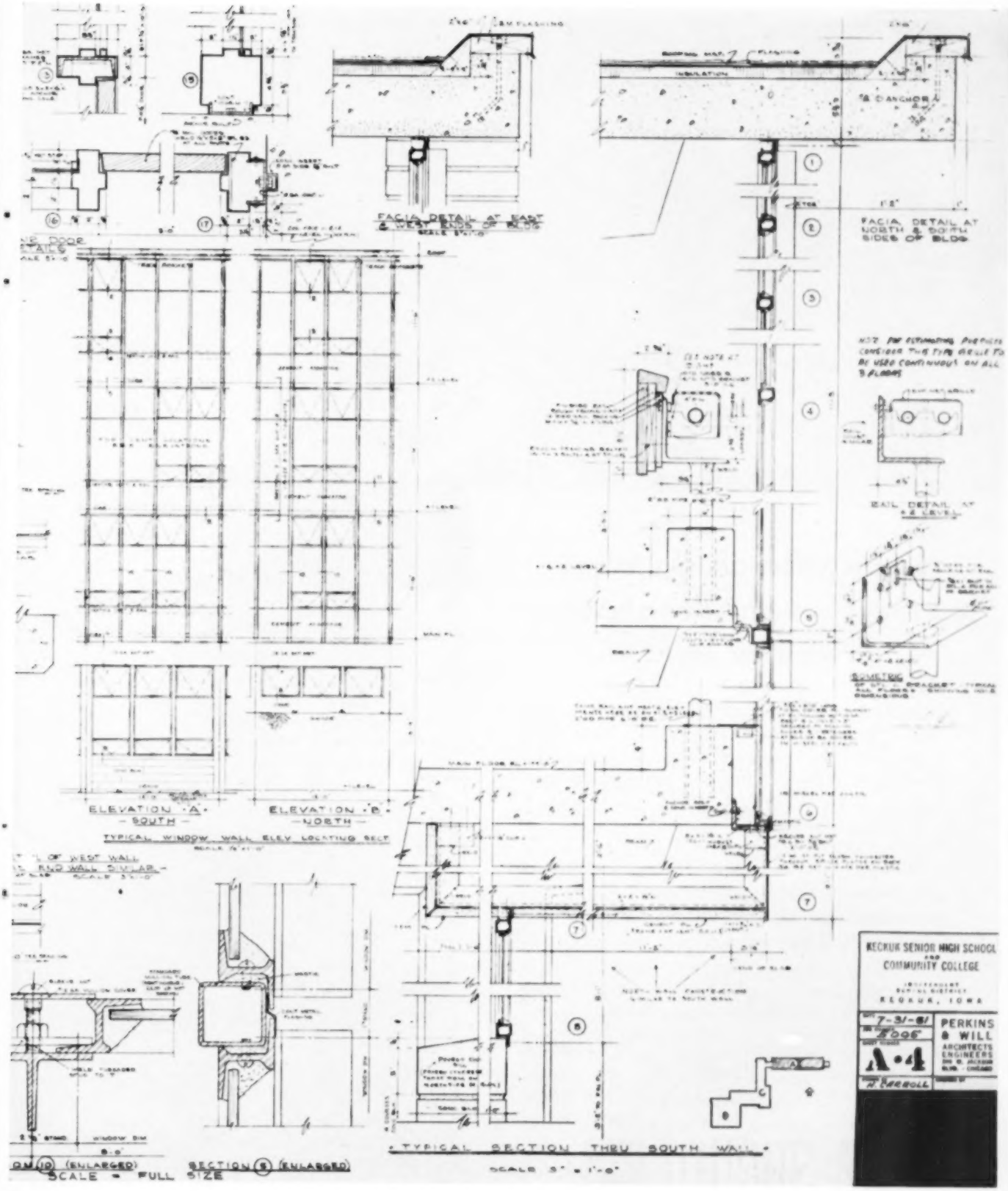


CLINIC, Los Angeles, Calif.
Walter L. Reichardt, Architect
H. Roy Kelley, Consulting Architect


SECTION & ELEVATION OF WEST END LOOKING NORTH FROM CORRIDOR - EAST END SIMILAR BUT OPP HAND -
DETAIL OF CONNECTION WITH UNIT 'C' &
SECT THRU LANDING AT MAIN FLOOR
PLAN OF RAIL BELOW
SECT THRU HANDRAILS
SECT THRU LANDING AT
NOSING DETAIL
PLAN OF STAIR AT -1 LEVEL -DETAIL AT 'P-P'-
(EAST END STAIR SIMILAR BUT OPP HAND)
TYPICAL DETAIL OF STAIR
• STAIR DETAILS •

corridor window wall: High School-Community College, Keokuk, Iowa

Perkins & Will, architects-engineers


FACIA DETAIL AT EAST & WEST ENDS OF BLDG
FACIA DETAIL AT NORTH & SOUTH SIDES OF BLDG
ELEVATION 'A' - SOUTH -
ELEVATION 'B' - NORTH -
TYPICAL WINDOW WALL ELEV LOCATING SECT
TYPICAL SECTION THRU SOUTH WALL
SECTION (10) (ENLARGED)
SECTION (9) (ENLARGED)
SCALE = FULL SIZE
RAIL DETAIL AT
SLIDING DOOR DETAILS
REGNUA SENIOR HIGH SCHOOL AND COMMUNITY COLLEGE
REGNUA, IOWA
7-31-61
5006
A-4
PERKINS & WILL
ARCHITECTS ENGINEERS

Look! Matching door completes the decorative wall of light

Here's unity in color, tone and pattern with beauty that speaks for itself. The decorative glass door and wall pick up color and light in the hall outside and bring them through in a lovely, interesting blend. Yet the view is obscured for privacy.

The Blue Ridge *Securit** Interior Glass Door is a single piece of glass patterned on both sides. It's an attractive door in other settings, too. The neutral tone of this glass complements all colors, goes well with other materials. The *Securit* Door is tempered—toughened to take hard usage.

Here's a door that is easy to hang. It requires no cutting, no mortising. It arrives at the job with distinctive, easily applied hardware.

The price compares favorably with that of high-quality doors of ordinary materials—and you save on installation and maintenance costs. For more information see your L·O·F Glass Distributor or Dealer. Look for his name in your phone book yellow pages under "Glass". Or write us direct.

BLUE RIDGE GLASS CORP. QUALITY GLASS

securit® L·O·F GLASS

INTERIOR GLASS DOORS

Securit Door and matching panels of Muralex patterned glass in offices of Bartolomeo Associates, Architects and Engineers, Chicago.

BRIEF DATA

Glass—⅜" thick. Muralex patterned on both surfaces.

Tempered—three to five times stronger than untempered glass of same thickness.

Reversible—can be used right or left hand.

Standard Sizes—

2'6" x 6'8"	2' 5 1⁄16" x 6' 7 1⁄16"
2'8" x 6'8"	2' 7 1⁄16" x 6' 7 1⁄16"
3'0" x 6'8"	2'11 1⁄16" x 6' 7 1⁄16"
3'0" x 7'0"	2'11 1⁄16" x 6' 11 1⁄16"

Closers—when specified, the door can be shipped with a Sargent closer or prepared for use with an LCN concealed closer.

For more complete information, see the Securit Door insert in Sweet's Architectural File.

Many uses for beautiful patterned glass

Blue Ridge *Patterned Glass* offers many possibilities in offices, homes, stores and institutions. In partitions . . . for decorative windows to shut out bad views . . . to lighten halls . . . for distinctive built-in furniture. Choose from linear, checkered and overall designs in plain, textured or *Satinol** finishes.

*

Libbey·Owens·Ford Glass Co., Dept. B-22104
Patterned & Wire Glass Sales
608 Madison Avenue, Toledo 3, Ohio

Please send me your folder "Blue Ridge *Securit* Interior Glass Doors".

I would also like the booklet of ideas for using Blue Ridge *Patterned Glass* in ☐ homes ☐ other buildings. (Check one or both.)

NAME (PLEASE PRINT)_____

ADDRESS_____

CITY_____ ZONE_____ STATE_____

Page Beauchamp

classrooms

Educational programs have changed so considerably in the last few years that design of the physical plants must change to accommodate them. Work projects, for example, now share importance with classroom lectures and recitations. The number of school-age children has increased rapidly, so that there is a tremendous demand for new schools and more classrooms. With the building of better and bigger schools, consider the changes that are indicated:

1. Furniture must be mobile and adaptable to various settings.
2. Storage space must be supplied to take care of materials (not textbooks).
3. Use of room dividers is often required to separate individual activities, yet allowing for larger space when the entire group is involved.
4. Adjustment and control of lighting and acoustics are necessary with the increasing use of audio-visual material.

Tendency in design is toward larger classrooms which can house a number of activities—eliminating seldom-used special areas and the extra supervision. Budget-wise, of course, this is much more satisfactory.

School furniture design has made advances. Desk areas are increased to be more useful for more purposes. The tablet arm is being replaced because it was adequate only for minimum use (and right-handed pupils). Chalkboards colored green to reduce eye strain, as well as magnetic or reversible to become tackboards, aid in presentation of explanatory material.

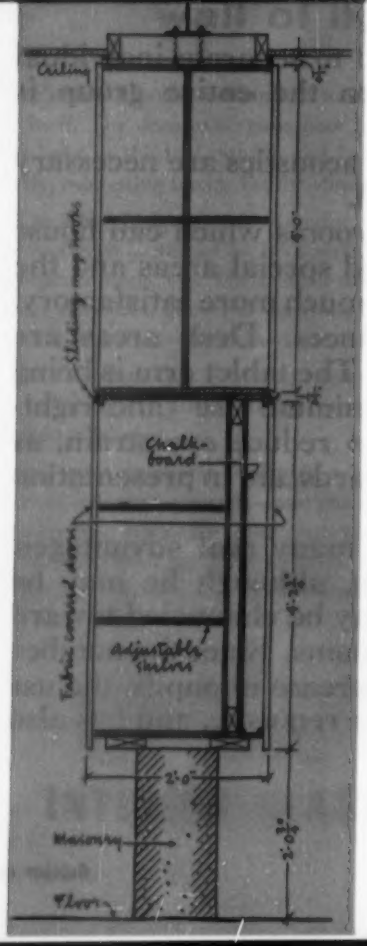
The larger self-contained classroom has many real advantages. The student is not separated from his group, although he may be engaged in different activities. Expenditures may be channeled toward equipment, rather than toward building more rooms. Since the number of teachers has not increased to take care of increase in pupils, the use of one supervisor for all activities has become a requisite, and has also proved effective.

classrooms

location | Holmes Elementary School, Darien, Connecticut

architects | Ketchum, Giná & Sharp

tackboard



acoustical ceiling

brick wall

data

cabinetwork

All Cabinetwork: custom-designed by architects.

doors and windows

Doors: flush-panel solid-core oak-face veneer, clear finish/ Roddis Plywood Corporation, Marshfield, Wis.

Windows: intermediate-weight aluminum projected/ J. S. Thorne Co., 8501 Negeman St., Philadelphia 36, Pa.

furnishings and fabrics

Seating and Desks: Heywood-Wakefield Co., Gardner, Mass.

Fabrics: Fiberglas curtains/ Owens-Corning Fiberglas Corp., 16 E. 56 St., New York, N. Y.

Vinyl Fabric Covering for Tackboards: "Strawtex"/ L. E. Carpenter & Co., Inc. 350 Fifth Ave., New York, N. Y.

lighting

Concentric Ring Incandescents: Sylvania Electric Products, 1740 Broadway, New York 19, N. Y.

walls, ceiling, flooring

Walls: unpainted brick masonry.

Ceiling: "Acousti-Line"/ Celotex Corporation, 120 S. La Salle St., Chicago 3, Ill.

Flooring: asphalt tile/ Kentile, Inc., 58 Second Ave., Brooklyn, N. Y.

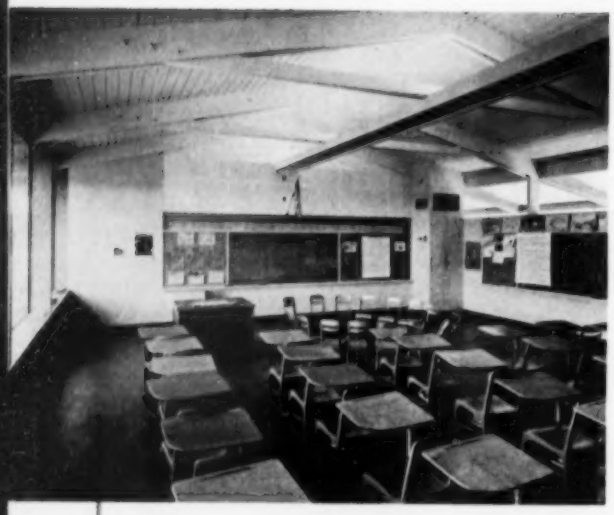
asphalt tile

Planned simplicity and direct circulation combined with multiple uses of space, equipment, and surfaces have contributed to the economy and effectiveness of this school design. Sturdy yet inexpensive construction materials were used to permit budgeting for adequately controlled natural and artificial lighting. Finally, controlled color harmonies, to provide cheerfulness and desired spatial effects, were carefully studied.

Walls are practically nonexistent, replaced by cabinets that provide storage, teacher's clothes closet, map rails, and chalkboards, while concealing heating controls, piping, and ventilating ducts. The cabinet doors are covered with a light plastic material which may be used for display. They slide to reveal chalkboards. The cabinets are attractive and easily maintained. Walls between classrooms and corridors are storage cabinets, with work tops on the classroom side and lockers on the corridor side.

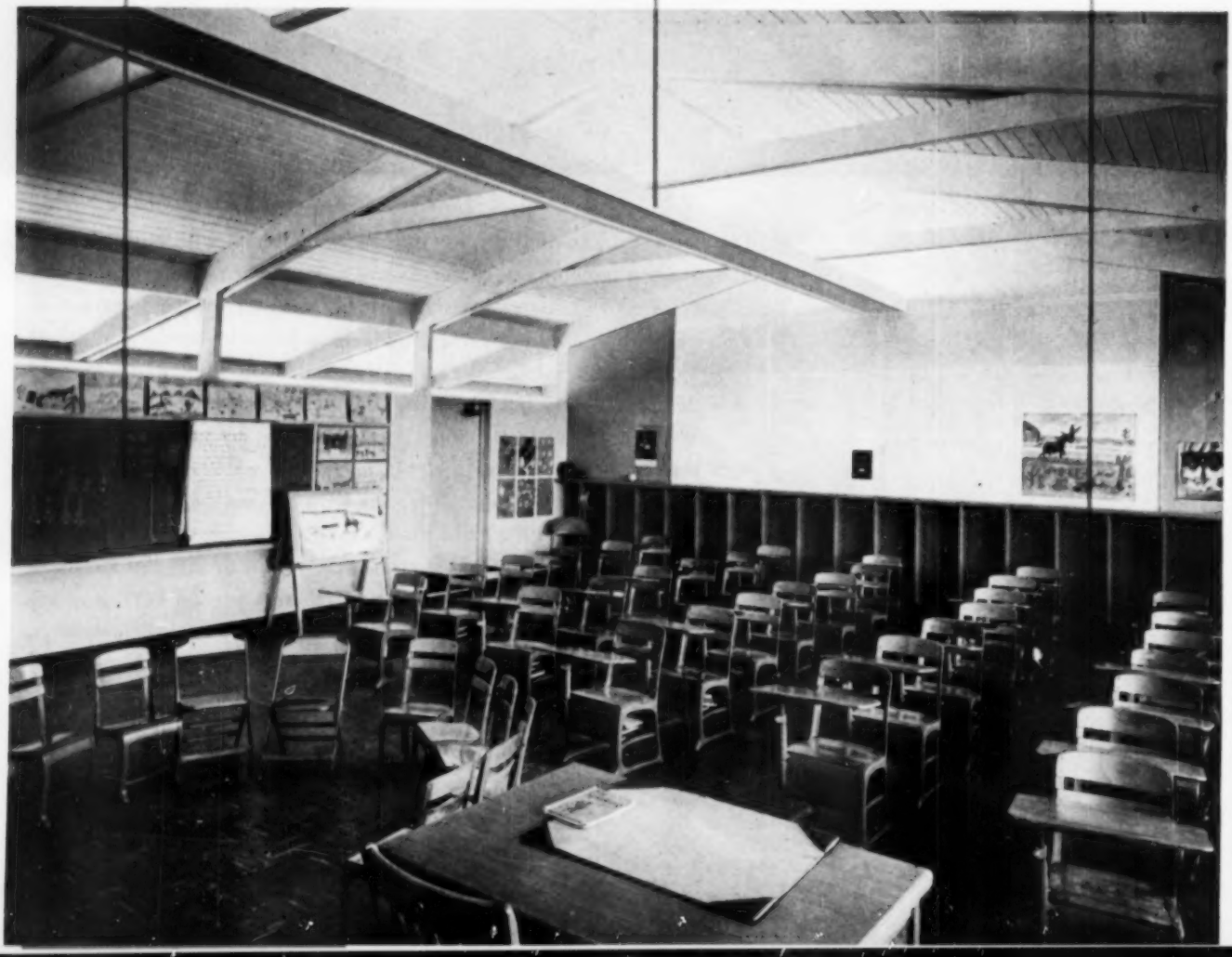
classrooms

location | Harold W. Smith School, Glendale, Arizona
architects | Fred M. Guirey and Ralph Haver



The general atmosphere of this school is one of residential informality, desired by the client as a transition between the home environment of the small child and his first venture into the outside world. All classrooms are north-lighted, grouped in banks of four rooms to a building. The twelve-classroom plant has a finger-type arrangement. The lighting system allows three controlled levels of illumination.

asphalt tile
chalkboard
lighting trough
coat closet



coat closet

tackboard

data

doors and windows

Doors: "Kaylo Stay-strate"/ U. S. Plywood Corp., 55 W. 44 St., New York 36, N. Y.

Windows: Fenestra/ architectural projected/ Detroit Steel Products Company, 2250 E. Grand Blvd., Detroit, Mich.; glass/ D. S. B. and 3/16" crystal sheet Libbey-Owens-Ford Glass Co., Room 1038-T, Nicholas Bldg., Toledo, Ohio.

equipment

Chalkboards: "Litesite Sterling"/ Weber-Costello Co., 12th & McKinley, Chicago Heights, Ill.; "Austral boards"/ Austral Products Corporation, 225 Broadway, New York, N. Y.

Tackboards: Armstrong Cork Co., 1010 Concord St., Lancaster, Pa.

Linoleum Counter Tops: Armstrong Cork Co.

Locks and Latch Sets: P. & F. Corbin Division of American Hardware Corp., 100 Orchard St., New Britain, Conn.

Hinges: The Stanley Works, 195 Lake Ave., New Britain, Conn.

lighting

Indirect Lighting: incandescent bulbs mounted in insulated bases in ceiling light trough.

walls, ceiling, flooring

Walls: pumice block/ "Superlite"/ Builder's Supply Corp., Phoenix, Ariz.; plywood/ U. S. Plywood Corp.

Ceiling: 2" Tongue and Groove Douglas fir mill-flooring.

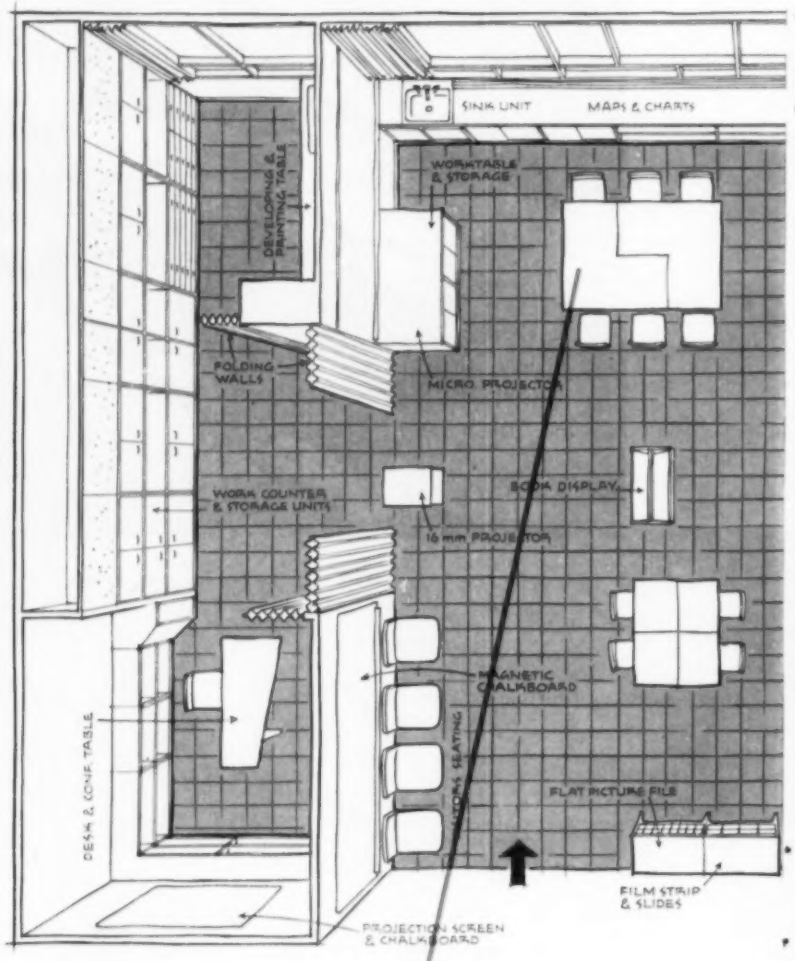
Flooring: "Kentile"/ Napoleon Gray, #c-222/ asphalt/ Kentile, Inc., 58 Second Ave., Brooklyn, N. Y.

classrooms

This model of a secondary classroom was designed by Eggers & Higgins, Consulting Architects, as a 30′ x 50′ exhibit for a schoolmen's convention. It is intended to serve multiple uses and lays particular emphasis on audio-visual work. The furniture is adjustable to a variety of uses and needs. Chalkboards may be reversed in some cases, to become tackboards; in others they are of magnetized metal and may be used for display.

The model classroom is divided into two areas. The classroom section contains spaces for lectures and demonstrations, informal reading, television-radio-phonograph core, project center (with work tables and storage units), and a visitors' area. The conference section

CEILING "Acousti-Luminus"/ translucent, corrugated ceiling of thin "Lumi-Plastic" suspended below continuous rows of fluorescent or slimline light sources/ Luminous Ceilings, Inc., 2500 W. North Ave., Chicago 47, Ill.



data

Ventilators: Herman Nelson units/ matching cabinets/ American Air Filter Co., Inc., Louisville 8, Ky.

Roll-Up Projection Screen: portable/ Beseler Visual Products Co., Inc., 210 E. 23 St., New York 10, N. Y.

Thermostat and Master Control Panel: Minneapolis-Honeywell Regulator Co., 221 Fourth Ave., New York, N. Y.

Television, Radio-Phonograph Unit, 16-mm. Projector: RCA Victor, 36 W. 49 St., New York, N. Y.

Work Tables with Storage; Stainless Steel Work Sink; Developing and Printing Table; Wall and Base Cabinets: Hamilton Manufacturing Company, 424 Madison Ave., New York, N. Y.

Storage Cabinets and Racks: Neumade Products Corporation, 330 W. 42 St., New York, N. Y.

Book Trucks: Remington Rand, Inc., 315 Fourth Ave., New York, N. Y.

Draperies: double-track system/ Plastic Products Co., 1822 E. Franklin St., Richmond, Va.

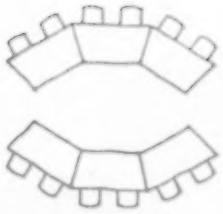
Walls: plastic fabric covering.

Flooring: vinyl tile/ gray/ Robbins Floor Products, Inc., Tuscumbia (Muscle Shoals), Ala.

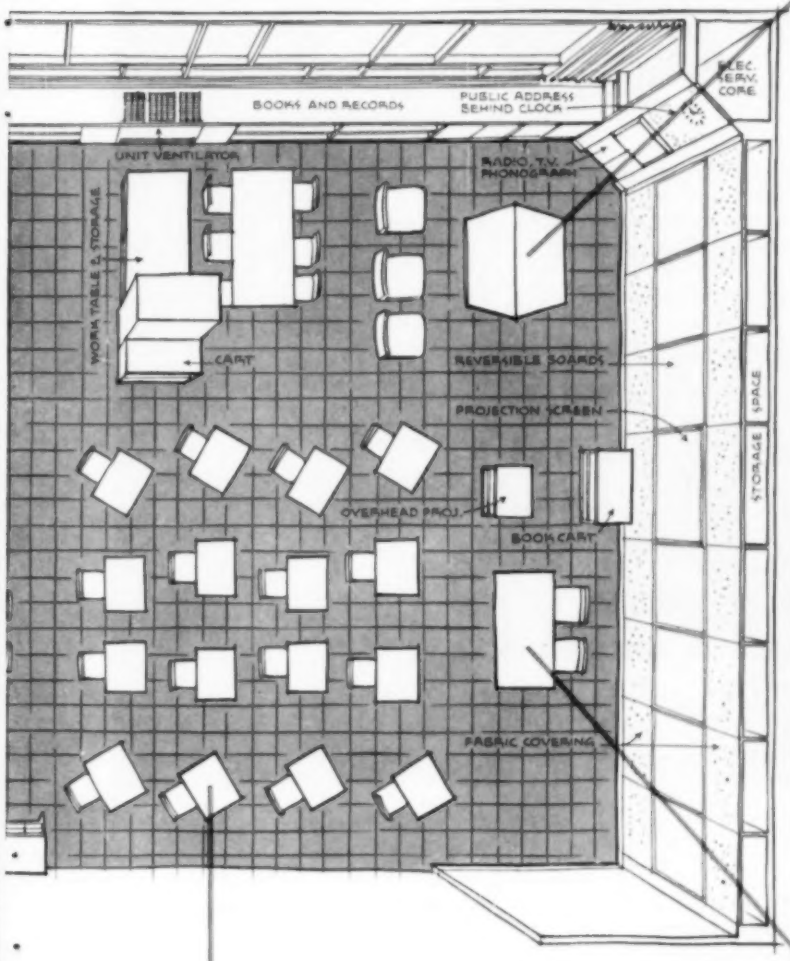
L-SHAPED TABLE #115/ American Seating Company, Grand Rapids 2, Mich.

provides for student conferences, as well as an area for working on illustrative material, such as slides and films.

This multiple-purpose room makes unnecessary a number of specialized rooms —and allows the class to operate as a continuous, unified group with better supervisory control.

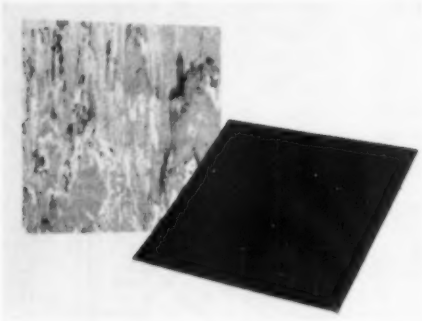


TRAPEZOIDAL TABLE #116/ American Seating Company, Grand Rapids 2, Mich.

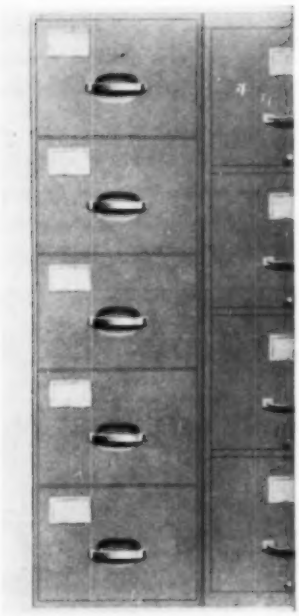


CHALKBOARDS "Reverse-All Unit"/ with tackboard on reverse side/ "All-Steel Chalkboard"/ magnetic/ Austral Products Corp., 225 Broadway, New York 7, N. Y.

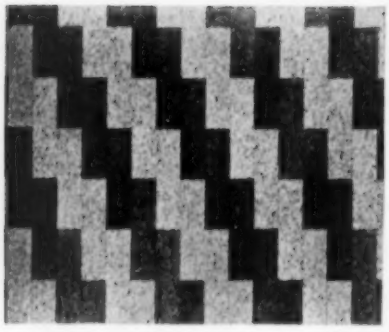
STUDY DESK #445, with chair/ 16" x 23" top with variable height settings of 28", 29", and 30"/ seat range of 16", 17", and 18" heights/ steel frame finished in beige baked enamel/ plywood top, seat, and back rails in natural birch finish, available with plastic surface: WORK TABLE AND CHAIRS/ American Seating Company, Grand Rapids 2, Mich.

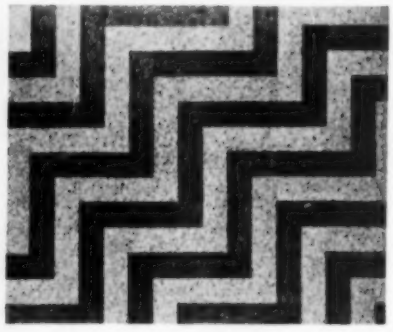


Self-Adhering Rubber Tile: may be applied to any type subfloor without special preparation or adhesive/ adhesive applied in manufacture/ polyethelyne plastic sheet protects adhesive, by process called "Vacu-Seal"/ **Robbins Floor Products, Inc., Tuscumbia (Muscle Shoals), Ala.**



File Cabinet: "Konpakt"/ available in 3-drawer desk height, 4-drawer counter height, 5- and 6-drawer standard 51" height/ filing area can be reduced, with more drawers than in standard cabinets of same height/ **Remington Rand Inc., 315 Fourth Ave., New York 10, N. Y.**





Cork Tile: "Custom Cork"/ two possible variations in installation shown/ 3" x 12" Mocha Tan and Coconut Brown unbeveled tiles/ 18 sq ft of each color packed in one carton/ eliminates necessity of cutting on the job/ **Armstrong Cork Company, Lancaster, Pa.**

Paint Stabilizer: "Thixotropic Alkyd"/ jelly-like consistency/ will not pour or drip from brush/ slight friction of the brush causes paint to change to the flowing state, as friction ceases, paint returns to thixotropic state, preventing sagging, curtaining, and beading/ **T. F. Washburn Company, Chicago, Ill.**

Mosaic's new 9" x 6" x ½" Glazed Wall Tile on corridor wainscot, Foothills School, Boulder, Colo. Robert Ditzen, Architect. Reeves-Ryan Tile Co., Tile Contractor.

This home-like floor in Mace's Lane High School, Cambridge, Md., is a Mosaic Formfree® Pattern in Granitex Mosaics—youthful looking, long lasting, easy to clean. Johannes & Murray, Architects. George E. Adshead & Son, Tile Contractor.

Men's Pool, Syracuse University, Syracuse, N. Y. Ceramic Mosaic Tile gives a lasting, sanitary finish to pool lining and deck. Surrounding walls of Mosaic Glazed Wall Tile. Lorimer Rich & Assoc., Architect. Harry A. & F. Curtis King, Associate Architects. Stearns & Bergstrom, Inc., Tile Contractor.

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unharmed by
a thousand busy feet,
a thousand smudgy hands

Fifty years from today, a look inside these schools would tell you more eloquently than any words . . . there is nothing in the world to equal Mosaic Clay Tile for permanent beauty and satisfaction.

For helpful literature on the many types of Mosaic Clay Tile, write Dept. 28-23, The Mosaic Tile Company, Zanesville, Ohio. "The Tile Handbook," published by the Tile Council of America, will help you specify. And remember—you are always welcome at our showrooms and at those of your Tile Contractors.

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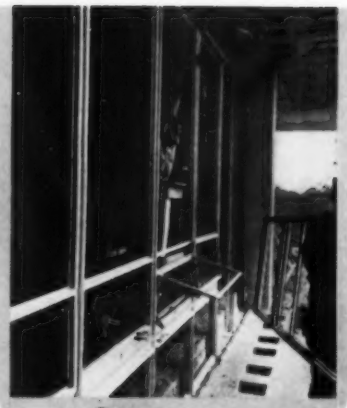
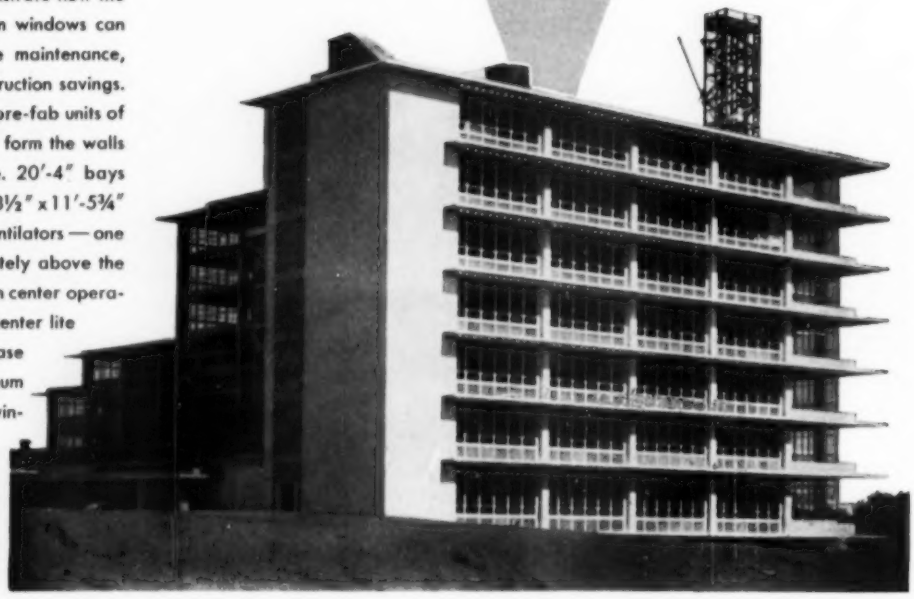


Workmen easily handle the sturdy, lightweight Ware wall sections which substantially reduce installation time.

Aluminum curtain wall by WARE

CUTS BOTH CONSTRUCTION AND MAINTENANCE COSTS FOR THE University of Arkansas Medical Center

These pictures clearly demonstrate how the use of floor-height aluminum windows can cut installation costs, reduce maintenance, and effect many other construction savings. They show how these Ware pre-fab units of aluminum and glass actually form the walls of this monumental structure. 20'-4" bays are made from mulled 3'-3½" x 11'-5¾" Ware factory units. Two ventilators — one at the top and one immediately above the sill are controlled by a built-in center operator at sill height. The large center lite is fixed. From the sill to the base of the window an aluminum spandrel is installed in the window frame on the job.



ARCHITECTS: Erhart, Eichenbaum & Rauch
Little Rock, Arkansas
Edward D. Stone, Associate

CONTRACTOR: W. R. Grimshaw Company
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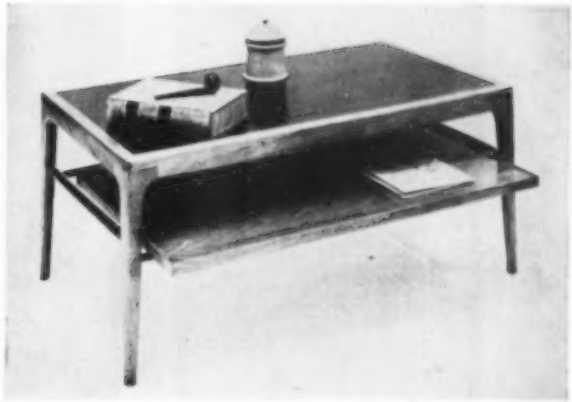
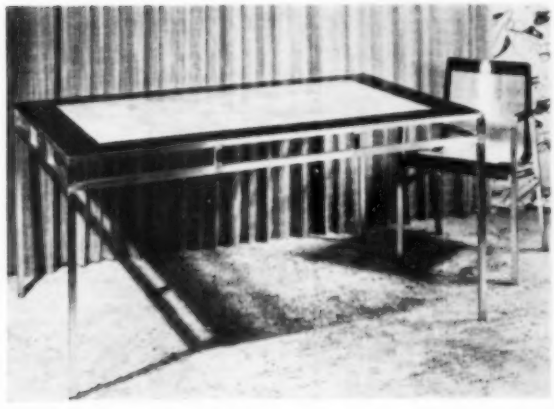
Molded Chair: molded Formica seat and back finished in a wood grain called "frosty walnut"/ back adjustable to height desired/ **The Troy Sunshade Co., Troy, Ohio.**

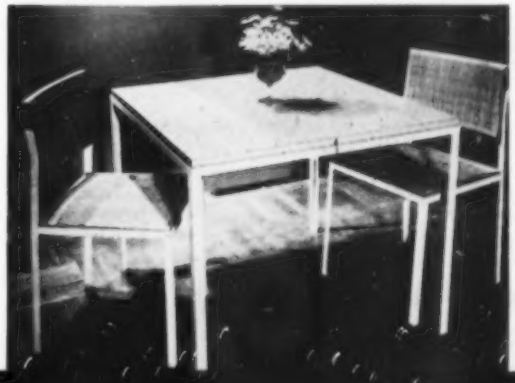


Coffee Table: #4224/ Formica top, cherry-wood base/ slide-out magazine shelf/ 39-¾" x 21-¾" x 17-½" high/ designed by William L. Beard/ **Statton Furniture Manufacturing Company, Hagerstown, Md.**



Dining Table: #17/ 3 tops available, magnesium frame/ 60" x 38" x 31" high/ **retail:** $175 with walnut top, $193 with pigskin tile top, $210 with Formica top/ **Dwight Furniture Company, Grand Rapids, Mich.**

End Table and Lounge Chair: #15, #12/ table available in walnut or white Formica top, magnesium frame in gold- or pewter-colored finish/ **retail:** $61/ lounge chair upholstered with 5" foam rubber/ magnesium frame/ **retail:** $167, in muslin/ **Dwight Furniture Company, Grand Rapids, Mich.**



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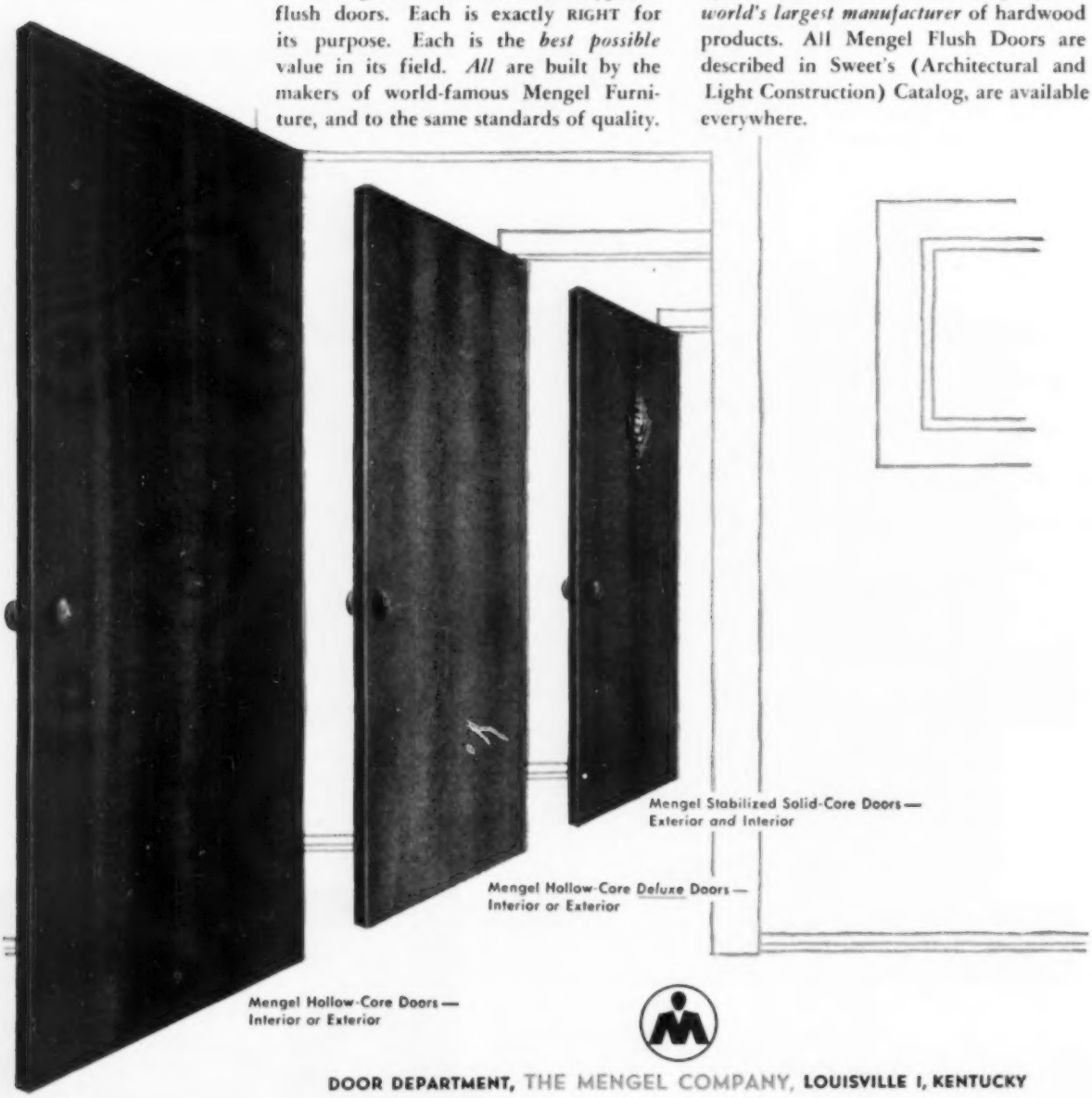

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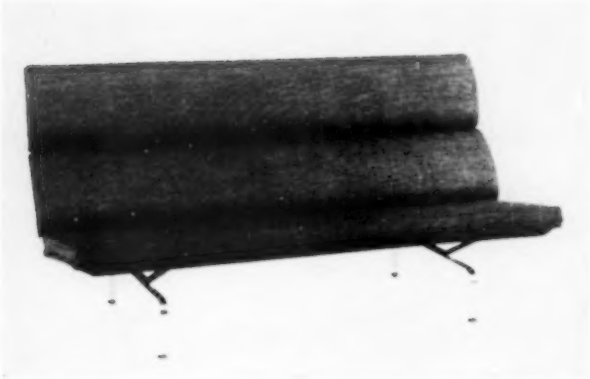

Armless Sofa: #473/ "Sofa Compact"/ standard length, fully upholstered/ base supports of chrome-plated steel/ designed by Charles Eames/ **retail:** $238 in tweed, $246 in Naugahyde, $272 in rayon cover/ **Herman Miller Furniture Company, Zeeland, Mich.**

Chair: #PKC-1/ upholstered wire construction, pivot of black-finished metal with aluminum foot-rests/ available with one-or two-piece cushions/ designed by Charles Eames/ **retail:** $54/ **Herman Miller Furniture Company, Zeeland, Mich.**

Dining or Desk Chair: #5468/ upholstered seat with birch frame and walnut backrest, or walnut frame and birch backrest/ designed by George Nelson/ **retail:** $66, in muslin/ **Herman Miller Furniture Company, Zeeland, Mich.**

Sofa: #5483/ cantilevered arms/ welting on upholstery omitted at wear points/ upholstered in foam rubber on No-Sag coil springs, cast-aluminum legs/ 31-1/4" high, 82" wide, 33" deep/ designed by George Nelson/ **retail:** $454, in muslin/ **Herman Miller Furniture Company, Zeeland, Mich.**

Coffee Table: #5452/ gray or white Micarta top with natural birch/ cast-aluminum base, enameled black or white/ designed by George Nelson/ **retail:** $110/ **Herman Miller Furniture Company, Zeeland, Mich.**

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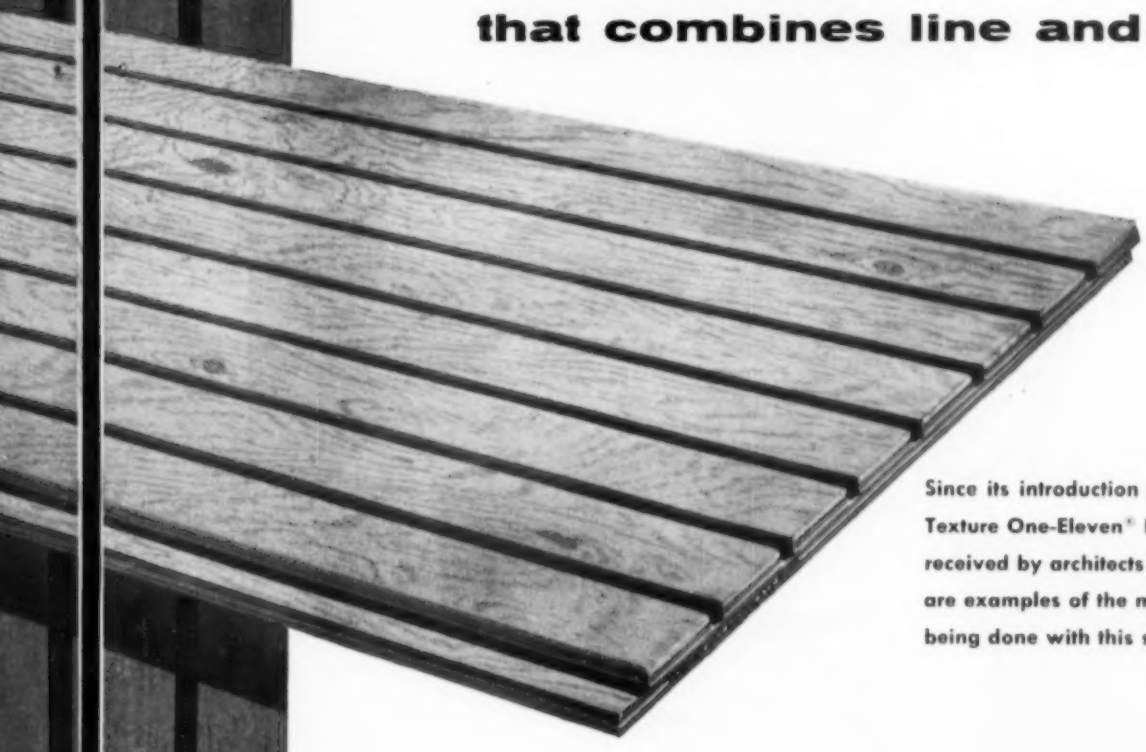

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air and temperature control

1-112. Berko Electric Radiant Glass Heat Panels (28CBE), 4-p. folder describing line of Pyrex glass panels for radiant heating. Construction details; list of features, recommended uses, ratings, and installations. Sectional drawings, photos of models, and installation photos. Berko Electric Mfg. Co., 212-40 Jamaica Ave., Queens Village 28, N. Y.

1-113. Bros Packaged Boilers (WT-7), 8-p. brochure with information on operation of three types of boilers built to meet steam requirements in medium pressure range (from 4,100 to 30,000 lb per hour), burning gas, oil, or combination of both. Photos, drawings, tables of capacity, heating surface, size, and weight. Wm. Bros Boiler and Mfg. Co., 1057 Tenth Ave., S. E. Minneapolis 14, Minn.

1-114. The Fitzgibbons Boiler-Burner Unit, AIA 30-C-1 (770-10-1), 4-p. circular describing preassembled and wired unit to be used for forced hot-water systems in small homes. Diagrams and drawings with descriptions of component parts, specifications, dimensions. Fitzgibbons Boiler Co., Inc., 101 Park Ave., New York 17, N. Y.

1-115. Shaw Panel Baseboard Radiators (B), 12-p. booklet showing design and installation of baseboard units for steam or forced hot-water systems to be used in residential or commercial buildings. Data for selection of units, including BTU ratings, piping connections, and assembly drawings. Shaw-Perkins Mfg. Co., Pittsburgh 19, Pa.

1-116. Westinghouse Air Conditioning Units (1630), 48-p. catalog stating relative merits of several types of air-conditioning units. Many tables of selection, performance, and physical data; assembly, dimension, and installation drawings. Westinghouse Electric Corp., Sturtevant Div., Hyde Park, Boston 36, Mass.

construction

★ **2-129. Mayo Clinic Diagnostic Building,** AIA 17-A (100-5), fifth in series of folders on noteworthy uses of aluminum—in this case for windows, spandrels, and solar shades. Detailed drawing obtained from the architect and fabricating subcontractor; photos and suggested outline specifications. Aluminum Co. of America, 1894 Alcoa Bldg., Pittsburgh 19, Pa.

2-130. Flintkote Roofings and Sidings (SR-I-54), 9-p. pamphlet presenting styles, sections, and surface textures available in asphalt and asbestos-cement roofings and sidings. Drawings show texture and pattern, product data. The Flintkote Co., Building Materials Div., 30 Rockefeller Plaza, New York 20, N. Y.

2-131. Milcor Steel Studs for Hollow Partitions, AIA 20-B-11 (230), 8-p. booklet outlining advantages of lightweight steel studs for use in nonbearing hollow partitions common to modern skeleton-frame construction. Design data, construction details, specifications, photos, and installation procedure. Inland Steel Products Co., Milwaukee 1, Wis.

2-132. Granolithic Concrete Floors, 8-p. catalog describing absorption-process method of installation and advantages of heavy-duty concrete floor for both new construction and worn areas. Step-by-step photos of procedure. Kalman Floor Co., Inc., 110 E. 42 St., New York 17, N. Y.

2-133. Further Proof That Marble Costs Less, Wears Better, and Lasts Longer, AIA 22-A (CP-6-54), 28-p. brochure stating case in favor of marble by examples of its use in number of buildings throughout country. Photos, comparison of materials and construction costs in percentages for 16 different locations. Marble Institute of America, Inc., 108 Forster Ave., Mount Vernon, N. Y.

2-134. Natco Structural Clay Tile, AIA 10A-B (S-53), 12-p. bulletin by manufacturer of structural clay tile, modular facing tile, clay conduit, clay sewer pipe, flue lining, Roman face brick, and brick-textured structural tile. Photos of applications, shapes and sizes, wall sections, and details. National Fireproofing Corp., 327 Fifth Ave., Pittsburgh 22, Pa.

★ **2-135. The PI Method,** 46-p. data manual for calculation and design of prestressed concrete members, reviewing basic equations, design procedures, and general specifications, and explaining actual construction methods. Sample problem with analysis and discussion of simple beam, photos of structures and equipment, results of tests performed at Rice Institute. Prestressing Inc., Transit Tower, San Antonio, Tex.

2-136. Industrial Sheeting, 20-p. booklet describing corrugated aluminum, galvanized steel, and asbestos-cement roofing and siding, plastic structural panels and vents, glass-fiber insulated construction, and methods of fastening and flashing each. Photos, dimensions, tables of allowable loads, and suggested details for flashing, vents, and insulated construction. Elwin G. Smith and Co., Williams St., Emsworth, Pittsburgh 2, Pa.

doors and windows

3-103. Construction Details: Metal Store Fronts, AIA 26-D, 30-p. folder of standard details of sash assemblies, moldings, showcase doors, and insulated glass settings. Also, information on improved series of muntin bars, mullion covers, and corner and division bars. Drawings; full, half, and quarter size details designed to permit easy tracing. Brasco Mfg. Co., Harvey, Ill.

3-104. Defender Cylindrical Locksets (K80), 6-p. brochure on standard-duty cylindrical lockets for use in apartments, stores, schools, and residences where economy and ease of installation is considered. Exploded drawing, list of recommended types for various uses, installation

(Continued on page 163)

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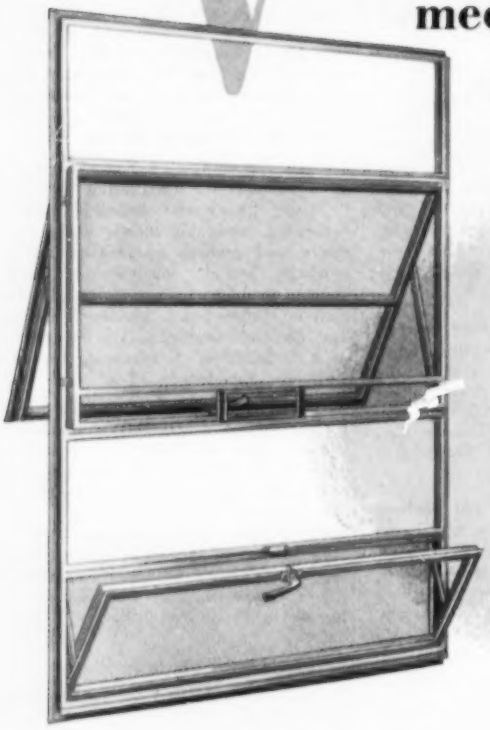

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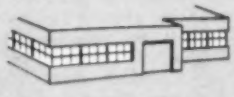

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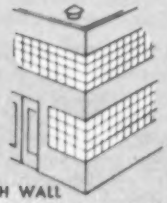

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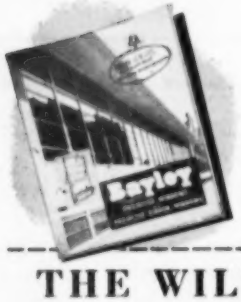

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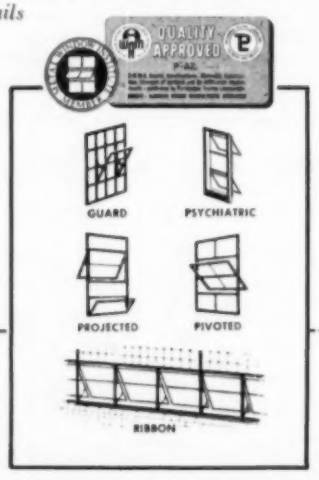

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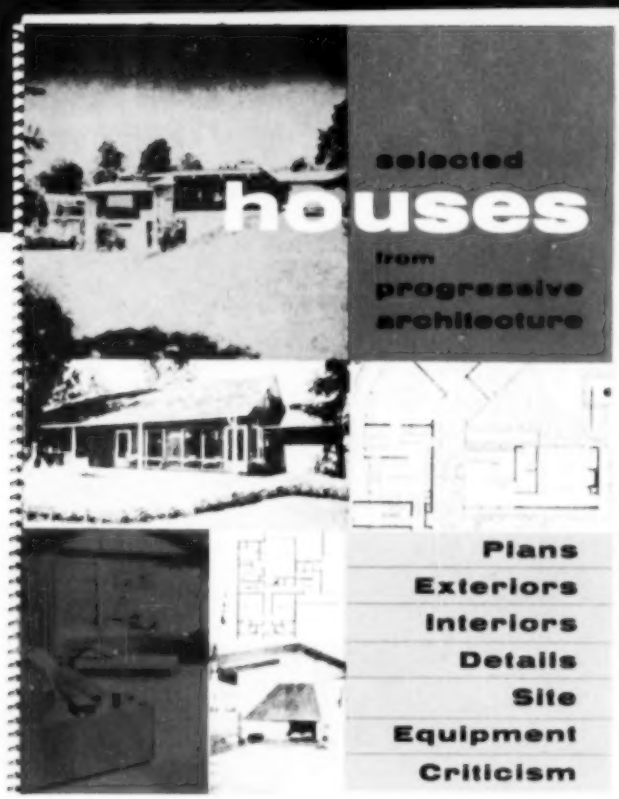

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(Continued from page 159)

instructions. P. & F. Corbin Div., The American Hardware Corp., New Britain, Conn.

3-105. Fulite Glass Doors and Frames, 8-p. pamphlet of glass doors with stainless-steel or bronze frames available completely fabricated and with hardware installed. Details, sections, elevations, and specifications of doors, hardware, and erection. Schacht Assoc., Inc., 1175 E. 156 St., New York 59, N. Y.

3-106. International Doors, 16-p. bulletin of turnover, bifold, and telescoping canopy doors for hangars; vertical lift, slide, turnover, and special-purpose doors for industrial uses. Photos, operational drawings, and specifications for each type of door. International Steel Co., 1983 Edgar St., Evansville, Ind.

electrical equipment, lighting

4-79. Bulldog Type BD Plug-in Bustribution Duct, AIA 31-C-621 (BD-755), 20-p. booklet describing enclosed bus-bar system of plug-in power for lighting and other circuits, consisting of ventilated duct for feeder circuits and enclosed duct for branch circuits. Photos of industrial installations, diagrams of decentralized and centralized systems, standard sections and fittings, and hanger arrangements. Bull-Dog Electric Products Co., Detroit, Mich.

4-80. Day-Brite "Mobilex" Lighting System, AIA 31-F-2 (OD-606), 4-p. folder written in collaboration with U. S. Gypsum Co. to show integration of lighting and acoustical ceilings. Photometric data, drawings, and details of lighting installation; sound-absorption table for acoustical ceiling suspended by steel channels. Day-Brite Lighting, Inc., 5411 Bulwer Ave., St. Louis 7, Mo.

4-81. Reflectors for Slimline and Fluorescent Lamps, AIA 31-F-2 (R-54), 4-p. folder on reflector-type lighting fixtures with open, louvered, or glass diffusers for use where direct lighting is required with adequate shielding from critical angles of vision. Detailed specifications, application notes, installation data. Gruber Lighting, 125 S. First St., Brooklyn 11, N. Y.

4-82. Asymmetric Permaflectors, AIA 31-F-2 (B), 12-p. catalog on silver-mirrored reflectors for show window, perimeter, general, and indirect lighting installations of all types. Cross-section drawings of mounting methods, recommended application of each size and type, distribution curves. Pittsburgh Reflector Co., Oliver Bldg., Pittsburgh 22, Pa.

4-83. Sylvania Fluorescent Lighting Guide Book (FL-524), 24-p. booklet intended as general reference on fluorescent lighting: what it is, its advantages, available sizes, colors, and necessary accessories. Drawings of lamps and holders, reference charts for choice of ballast, table of recommended color lamps to be used for general store lighting and display. Sylvania Electric Products Inc., 60 Boston St., Salem, Mass.

finishers and protectors

5-23. Hillyard Floor Finishes and Treatments, 8-p. guide for specification of floor finishes for particular requirements; covers cement, terrazzo, wood, composition materials, tile, marble, cork, and glazed wall tile for general installations and bowling alleys, gyms, and swimming pools. Hillyard Chemical Co., St. Joseph, Mo.

5-24. Celite Flatting Agents and Pigment Extenders (FA-47A), 16-p. brochure covering general advantages of diatomite products for increased performance of protective coatings, for stronger adhesion low-gloss paints, and as filter to produce

(Continued on page 164)

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aluminum entrances

ATLANTA • BROOKFIELD, ILL.
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p/a manufacturers' literature

(Continued from page 163)

clear lacquer, shellac, and varnish. Table of finishes stating benefits gained by use of product and typical formulations. Johns-Manville, Celite Div., 22 E. 40 St., New York 16, N. Y.

5-25. Color for Schools and Public Buildings (A34-44-754), 8-p. pamphlet giving suggested finishes and color schemes for schools and offices. Table of percentage of light reflectance, American Standard Safety Color Code, glossary of paint terms, and general specifications. The Martin-Senour Co., 2520 S. Quarry St., Chicago 8, Ill.

insulation (thermal, acoustical)

6-38. Gilsulate Insulation, 20-p. technical data manual on insulation and corrosion protection of hot underground pipes. Information on selection of insulation material, ditch size for varying soil conditions, efficiency, and itemized design procedure. American Gilsonite Co., 134 W. Broadway, Salt Lake City, Utah.

Two 4-p. folders on application of asphalt-impregnated sheathing board which acts as roof decking, insulation, and finished interior ceiling—designed primarily for contemporary homes with exposed beam ceilings. Complete instructions for installation; construction details. Insulite Div., Minnesota and Ontario Paper Co., Minneapolis 2, Minn.

6-39. How to Apply Insulating Roof Deck Unsealed (1 S 44).

6-40. How to Apply Insulating Roof Deck Sealed (1 S 45).

6-41. Fiberglas Insulations for Low Temperature Structures and Equipment, AIA 37-D-1 (IN6.A3), 20-p. publication describing design considerations, vapor barriers, and methods of application for several types of glass-fiber insulation. Construction details, thermal conductivity charts, product data, specifications. Owens-Corning Fiberglas Corp., Toledo 1, Ohio.

6-42. Zonolite Insulation Data Book (HI-48), 8-p. brochure on vermiculite insulating fill for residential and commercial construction. Heat transmission factors for several types of construction, installation procedure, physical properties. Zonolite Co., 135 S. LaSalle St., Chicago 3, Ill.

sanitation, plumbing, water supply

7-28. Fittings for Copper Plumbing (H), 84-p. catalog of fittings for copper tubing; wrought copper, cast solder, cast drainage, flared tube, and flanged fittings. Engineering data, instructions for soldering joints, size and shape descriptions, accessories. Northern Indiana Brass Co., Elkhart, Ind.

specialized equipment

8-57. Specifications, Amplified Master Television Antenna Systems, AIA 31-I-6 (J-2100), 36-p. booklet providing detailed specifications and design requirements for television distribution systems. Diagrams of typical horizontal and vertical systems, recommended conduit sizes. Jerrold Electronics Corp., 26 and Dickinson Sts., Philadelphia 46, Pa.

8-58. Loxit Chalkboard Setting System, AIA 35-B-11 (B.B. 1954), 16-p. pamphlet containing information on all-aluminum system for setting chalkboards and tackboards combining metal ground with snap-on extruded aluminum trim. Specifications, numerous details, and data on line of chalkboards and tackboards. Loxit Systems, Inc., 1217 W. Washington Blvd., Chicago 7, Ill.

8-59. Bronze and Aluminum Letters, AIA 15-R-1, 12-p. bulletin including full alphabets of six letter styles reproduced in outline for easy tracing. Information on spacing and determination of height, specification of alloys, details of installation. Oregon Brass Works, 1127 S. E. Tenth Ave., Portland 14, Ore.

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National Electrical Week, Oct. 18-24, 1954

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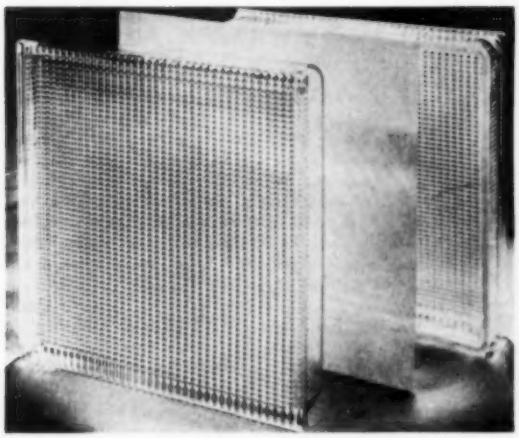
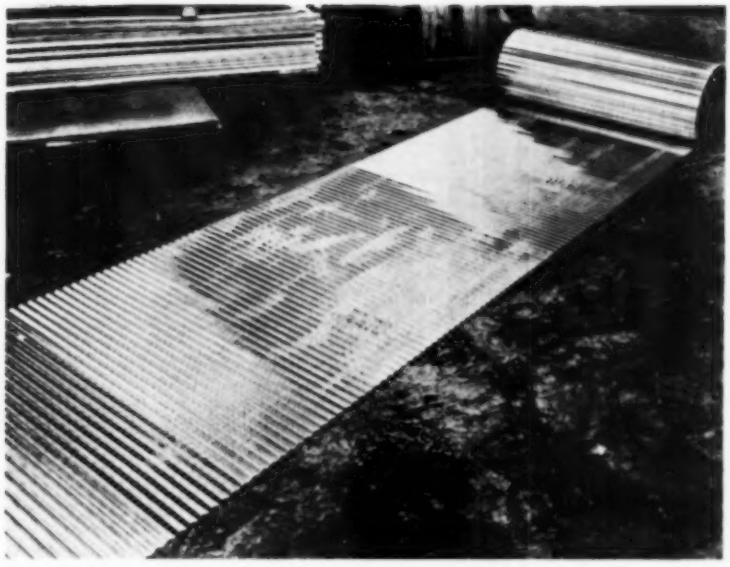


Pale green, glass-fiber diffusing screen sandwiched between faces of 12" double-cavity glass block reduces heat transmission and excessive brightness (above left). *Test* (above right) *compares surface brightness of new block and standard sun-exposure block with colorless filter. Three patterns are available, with light directed upward, diffused in all directions, or distributed over wide floor areas. In addition, newly designed exterior face has greater impact resistance. Pittsburgh Corning Corp., 1 Gateway Center, Pittsburgh 22, Pa.*



Designed for use on any flat roof, new thermoplastic acrylic-resin skylight is available in sizes made to fit standard roof-joist spacings and roof openings. The two-piece unit—wide-angle dome and sheet-copper evaporation trough—is attached by screws, roofing material is spread over the flange (above left), *and the protective coating is peeled off* (above right). *Architectural Plastics, Inc., 20 Fitch St., East Norwalk, Conn.*

Due to the length of the rolls (50', 100', and 200'), cross-corrugated aluminum roofing and siding can be laid without side laps. Rolls are available in three gages, in 24" and 48" widths, and with corrugations spaced either 1¼" or 2½" apart. Quaker State Metals Co., Lancaster, Pa.

p/a products

(Continued from page 167)

air and temperature control

Zonetrol: new zone-control unit designed to automatically open or close duct dampers of any forced warm-air heating or air-conditioning system in response to thermostatic temperature control. Unit has line voltage motor with secondary low-voltage control circuit incorporated internally. Any reasonable number of units can be used to create as many individually zoned areas as desired. Crise Controls Div., Acro Mfg. Co., Columbus 16, Ohio.

Filtrex Air Filter: new disposable air filter with specially processed glass-fiber filtering medium. Fibers are laid down to permit specific graded densities within pack. One integral unit formed by laminating technique which laminates metal grill to frame. Filters available for warm-air units, cooling units, and for special industrial applications. Filtrex Corp., 33-40 127 Pl., Corona 68, N. Y.

Janitrol Type "F" Summer Air Conditioner: new free-standing, self-contained cooling unit for commercial installations, available in 2-, 3-, and 5-ton cooling capacities. Adjustable louvers in outlet diffuser at top of unit direct air both vertically and horizontally. Steel cabinet finished in neutral blue-gray tone stands 88½" high, 26" deep, and varies from 26½" to 40½" in width, depending on size of unit. Janitrol Div., Surface Combustion Corp., Columbus 16, Ohio.

Trane Wall Line Convector: new cabinet-type heating unit designed specifically for modern institutional and industrial buildings with continuous windows. Sloping-top cabinets enclose high-capacity heating element of seamless copper tubing with mechanically bonded fins and lock together to form continuous heating unit. Special feature is screw adjustment fastened to element support bracket to obtain proper pitch of heating element. Available in low heights of 14", 20", and 26"; 4" or 6" deep; 2' to 6' lengths in increments of 4". Trane Co., La Crosse, Wis.

construction

Partition-ettes and Office-ettes: free-standing, movable office partitions permit flexibility and modular arrangement of work space. Made in steel or wood with topping panels of various materials—clear or frosted glass, acoustical board, corkboard, and pegboard to which shelves may be attached. Widths ranging from 9" to 66", heights of 39", 54", and 68". Arnot Jamestown Div., Aetna Steel Products Corp., 730 Fifth Ave., New York, N. Y.

Glasface Concrete Block: new development in concrete block construction is ceramic-glazed finish, applied without impairing structural strength. Scratch- and heat-resistant finish permits economy of construction by eliminating additional surfacing material. Available in complete range of colors and various finishes, including mottled and stippled. Ferro Corp., Cleveland, Ohio.

Rothar No. 2 Waterproofing: new chemically treated waterproof paper, designed to replace 55-lb. roll roofing, for use under crawl space and concrete slabs of industrial and residential buildings. Formed by bonding of two sheets of paper with waterproof laminant containing strong, continuous glass fibers for additional strength. High resistance to rot and mildew; available in widths to 25' with asphaltic laps. Glas-Kraft, Inc., Lonsdale, R. I.

Fyrate Ceilings: mechanically suspended ceiling system with 2-hr fire rating. Savings in labor accomplished by combining acoustical treatment, thermal insulation, and ceiling suspension in one operation; 3 psf dead load permits savings in structural design; easy access to ducts and conduit allows lowered maintenance costs. Fyrate, Inc., 832 W. Eastman St., Chicago, Ill.

(Continued on page 170)

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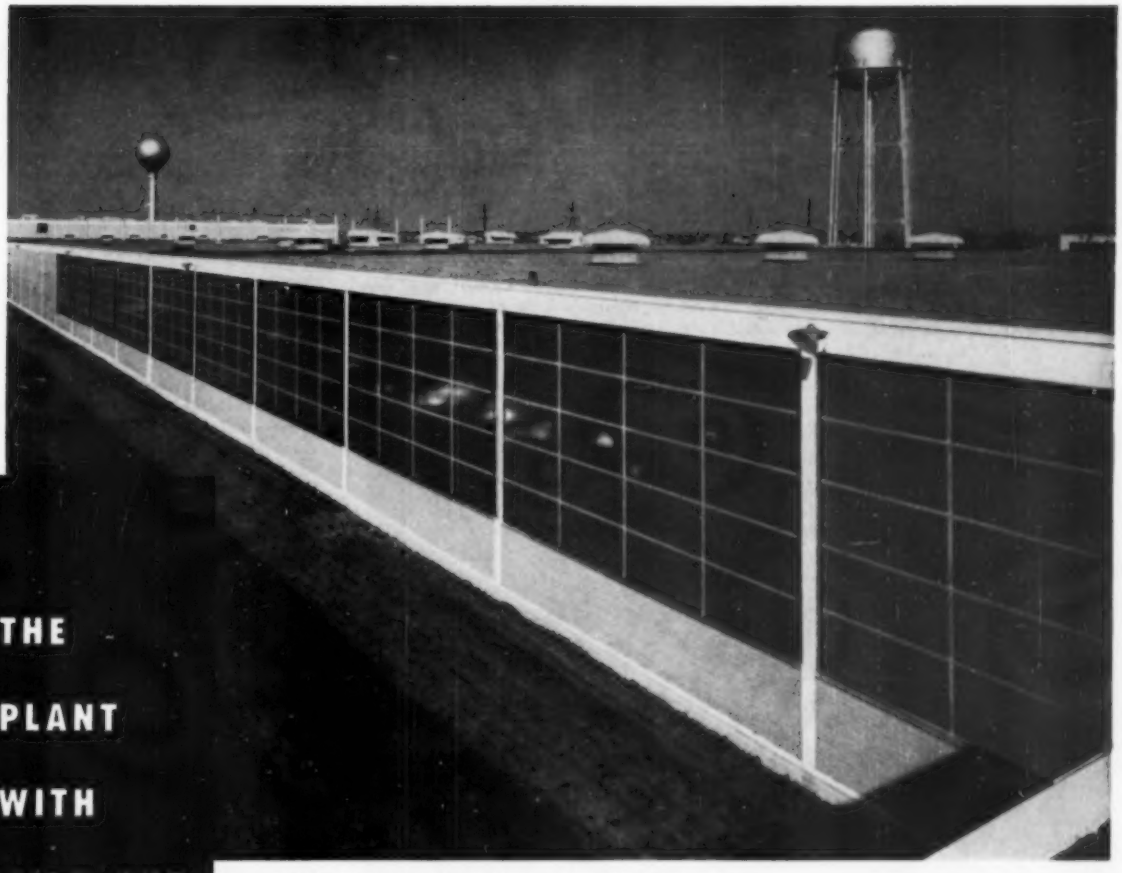

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Luxlite Coolite (glare reduced) installed in sidewall sash of Sawyer Biscuit Company, Melrose Park, Illinois. Skidmore, Owings, Merrill, Architects George A. Fuller Co., Gen. Cont., Hamilton Glass Co., Glazing Cont.

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p/a products

(Continued from page 168)

doors and windows

Institutional Door: new flush door, combining economy and lightness of hollow-core door with heavy blocking necessary to accommodate institutional hardware, is especially suited to needs of hospitals, schools, hotels, and commercial buildings. Core of cylindrical fiber colums is faced by 3-ply balanced panels, pressed with core and frame into integral unit. Top and bottom rails of ample width for mounting hardware; center cross rail and lock blocks for panic bars, locksets, and door pulls. General Plywood Corp., Louisville 12, Ky.

electrical equipment, lighting

Sylvania Fluorescent Lamp: new rapid-start, 8′ fluorescent lamp produces more light, according to manufacturer, than any other previous standard type. Because of relatively high loading, new lamp will work best in well-ventilated fixtures of industrial or commercial types, and outdoor applications. Standard cool white color; initial lumens: 7000, operating current: .815 amps, operating volts: 140. Sylvania Electric Products Inc., 1740 Broadway, New York 19, N. Y.

finishers, protectors

Arcopel, Arroc, and Arco Foundation Coat: three coating materials for masonry protection featuring easy workability, economical consumption, and self-priming. First is rubberized masonry paint for use on exterior surfaces or uncoated interior walls, providing tough, alkali-resistant decorative coating. Repels moisture from outside, and allows vapor to escape from within; may be applied to masonry not fully cured. Arco Co., 7301 Bessemer Ave., Cleveland 27, Ohio.

Macrylic Plastic Coating: balanced formulation of alkaline-resistant pigments, dispersed in acrylic emulsion vehicle, results in paint resistant to aging, heat, mildew, chemical fumes, and deteriorating elements. Tough, washable finish and fast-drying, odorless characteristics make it especially suitable for institutional use. Available in permanent nonyellowing white and flat decorator colors. Maintenance Coatings Co., Inc., 141 Broadway, New York 6, N. Y.

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Outdoor Incinor: automatic, outdoor, gas-fired incinerator for use with masonry and Type B chimneys. Features automatic clock-dial which turns on gas and lights burner, turns off at end of burning time. Positive-acting thermomagnetic valve controls pilot at all times. Burner rated at 20,000 Btu/hr; heat-resistant white-enamel finish; 35″ high x 22″ wide x 26½″ deep. Incineration Div., Bowser, Inc., Cairo, Ill.

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Korelock Paneling: prefab, prefinished hardboard paneling which resists dirt, moisture, and abrasion. Formed of two wood-fiber hardboard panels with hollow core for insulation value; vapor-balanced for stability and dryness under moist conditions. Tongue-and-groove joints eliminate need for divisional moldings and allow ease of installation. Available in 10 colors designed by Raymond Loewy Assoc. and four wood finishes; panels measure 2′ x 4′ or 2′ x 8′, ⅝″ thick. Marsh Wall Products, Inc., Dover, Ohio.

Ready-Framed Chalkboard, Displayboard, and Corkboard Units: complete, aluminum-framed units are equipped for immediate installation in classrooms, offices, and shops. Suspended from concealed hangers attached to wood or masonry; bottom of panel swings out from wall to provide inclined work surface. Interchangeability of units provides flexibility for teaching requirements; in 4′ x 4′ or 4′ x 8′ sizes. Weber Costello Co., Chicago Heights, Ill.

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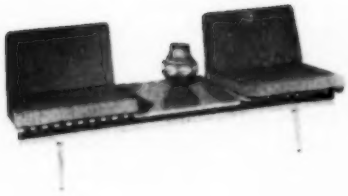

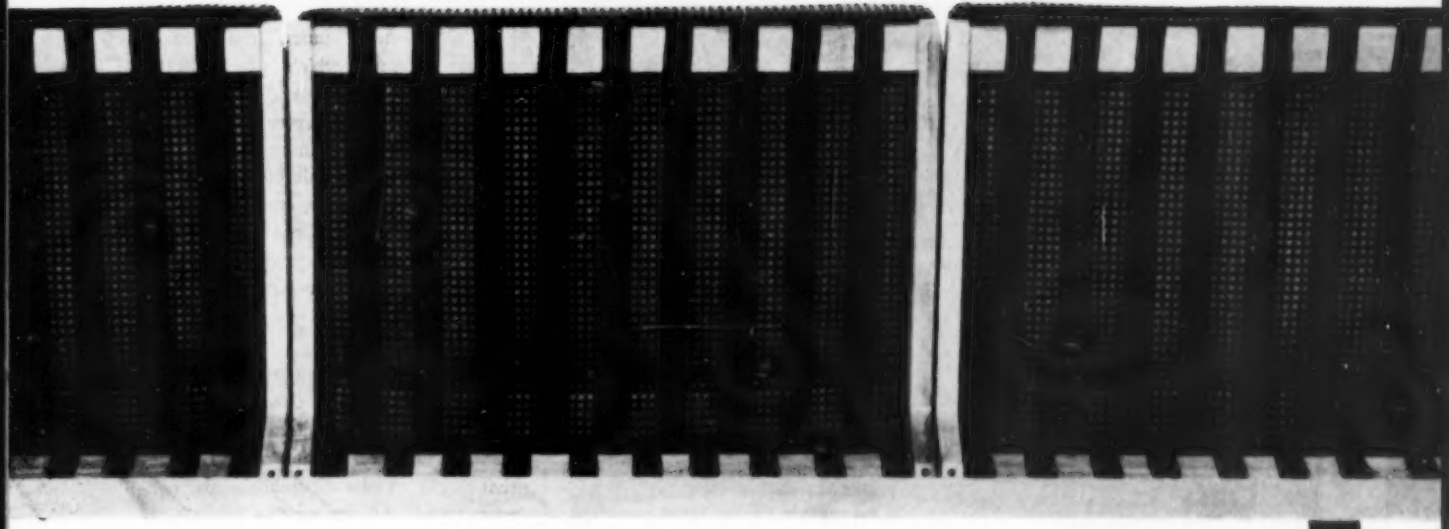

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out of school

by Carl Feiss

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Can in this Age of Progress without fuss
Be reached conveniently by motor-bus."

"Alas! the troubles that our Planners bring,
For modern traffic is a two-way thing."

"Ill fares the land, to hastening ills a prey.
Where dumps proliferate and then decay."

"Even now, as I stand pondering, I confess,
Naught greets the eye except a Splendid Mess.
But thou, Sweet Poetry, thou loveliest maid,
Come to our rescue with a Grant-in-Aid."

Excerpts from an epic poem, "The Decanted Village," by Christopher Hollis, *Punch*, March 24, 1954

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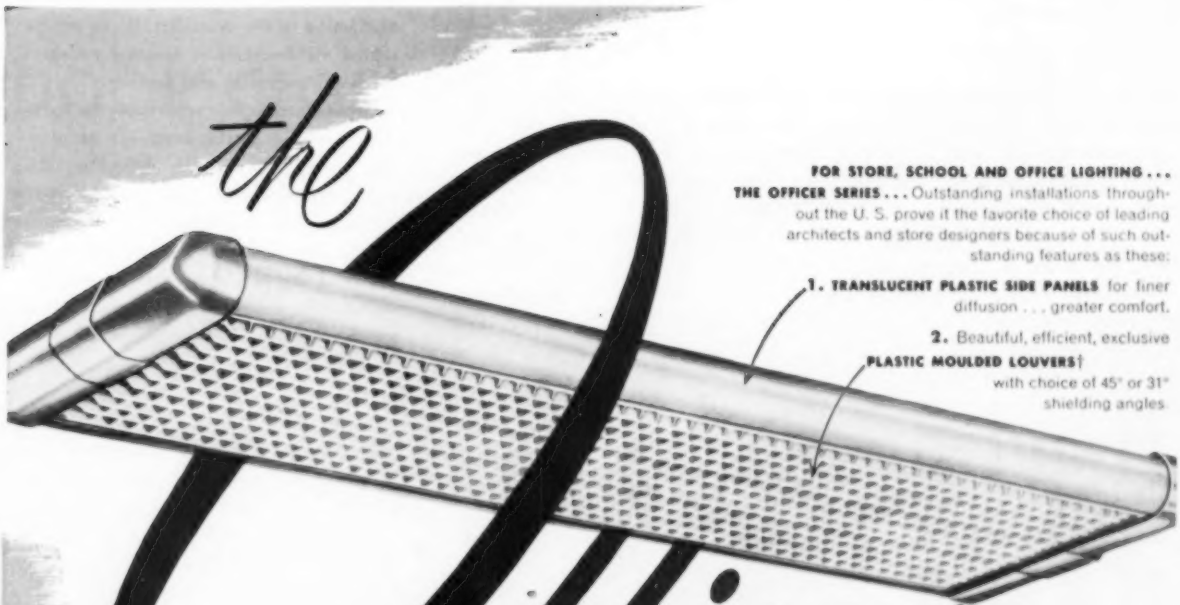
city planning education as related to architectural education

The theories and practices of professional and technical training for planned and designed environment have been greatly assisted recently by the publication of two important reports. Last month I discussed briefly the *Report* of the AIA Survey Commission, which analyzed architectural education and practice. This month I am writing about another report just published and of great significance, *Urban Planning Education*, by Prof. Frederick J. Adams of MIT, a project of the Alfred Bettman Foundation of Cincinnati in collaboration with the Committee on Professional Education of the American Institute of Planners and the Committee on Education of the American Society of Planning Officials.

The *Urban Planning Education* report is short (only 58 pages), concise, and compact. It attempts and nearly succeeds in defining urban planning, as we now know the subject, by discussing its objectives and scope. There are two short chapters on "The Role of the Professional Planner" and "The Training of the Professional Planner," the meat of a meaty document, which is found in the three pages of Chapter IV, "Conclusions." Following Chapter IV are brief summaries of the training programs in the 21 planning schools offering professional degrees, options, or majors in the subject. On pages 16 and 17 of the report are lists of the schools and tabulations, as to enrolment for 1952-53, and the number of alumni per school, as of October 1952.

You may wish to enquire why I am writing about planning education in a journal devoted to architecture and the classically accepted allied arts. The fact that many of the 21 schools are connected with departments or faculties of architecture and landscape architecture and the allied arts and sciences, is of fundamental importance. Five schools are run at the graduate level by interdepartmental committees, with architecture represented in some cases. While the scene is constantly shifting, with more or less weight being added or subtracted

(Continued on page 174)



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out of school

(Continued from page 173)

in the social sciences (in particular, public administration and urban sociology) the preponderance of training of planners lies in the environment of architecture, engineering, and landscape architecture. This is largely an accident of history, but it is also a natural concomitant of the need for coupling urban technological analysis and problem explorations with designed and concrete solutions to social, political, economic, and physical problems of urban areas—expressed in physical terms as plans. The fact that all of these elements are, as Tracy Augur says, "inextricably intertwingled" makes for the complex job of the "generalist in planning," in contradistinction to the specialist, let us say, in school architecture, or hospital architecture, or residential architecture.

Professor Adams's report clearly states the dilemmas of the designers of planning curricula and the difficulties the student faces in mastering a wide variety of skills. The summaries of the various course offerings show plainly the transiency of this period of curriculum building and the problems of decision-making which are inherent in the early stages of training, for what is to all intents and purposes a new profession. Planned city building is nearly as old as architecture—perhaps as old. The history of city planning is every bit as fascinating as the history of architecture, but only half as well documented, to date. The names of the great city planners and city builders are just becoming part of our vocabulary. But as Professor Adams says *(page 21)*:

"That there is so little agreement among top-level planning technicians and administrators concerning basic concepts of planning explains, at least partially, the confusion in the minds of students and the general public as to the true nature of the planning profession. It may even raise the question in some minds as to whether planning is a profession at all. The best that can be hoped for the future is that 'its leaders are in a mood to accept criticism and are prepared to move forward into that larger field of usefulness' which stands today as a real challenge to the city and regional planner."

What is more important than acceptance of criticism by the leaders of planning is the need for the public and the technical world to accept leaders with imagination and the courage of their imagination. The facts, as indicated in the Adams Report, clearly demonstrate the transitional stages through which planning and planning education have recently been passing. The tremendous scope of urban planning—slum clearance, urban renewal, metropolitan area development, new towns, and all of the rest of the jobs to be done—implies a soundly formulated curriculum system, or perhaps many such systems, of which the content should be directed by teachers with skill and imagination. It is the old story in technical education; no one has hit on the answer to where to find and

(Continued on page 176)

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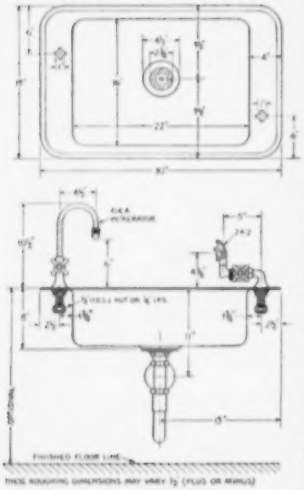

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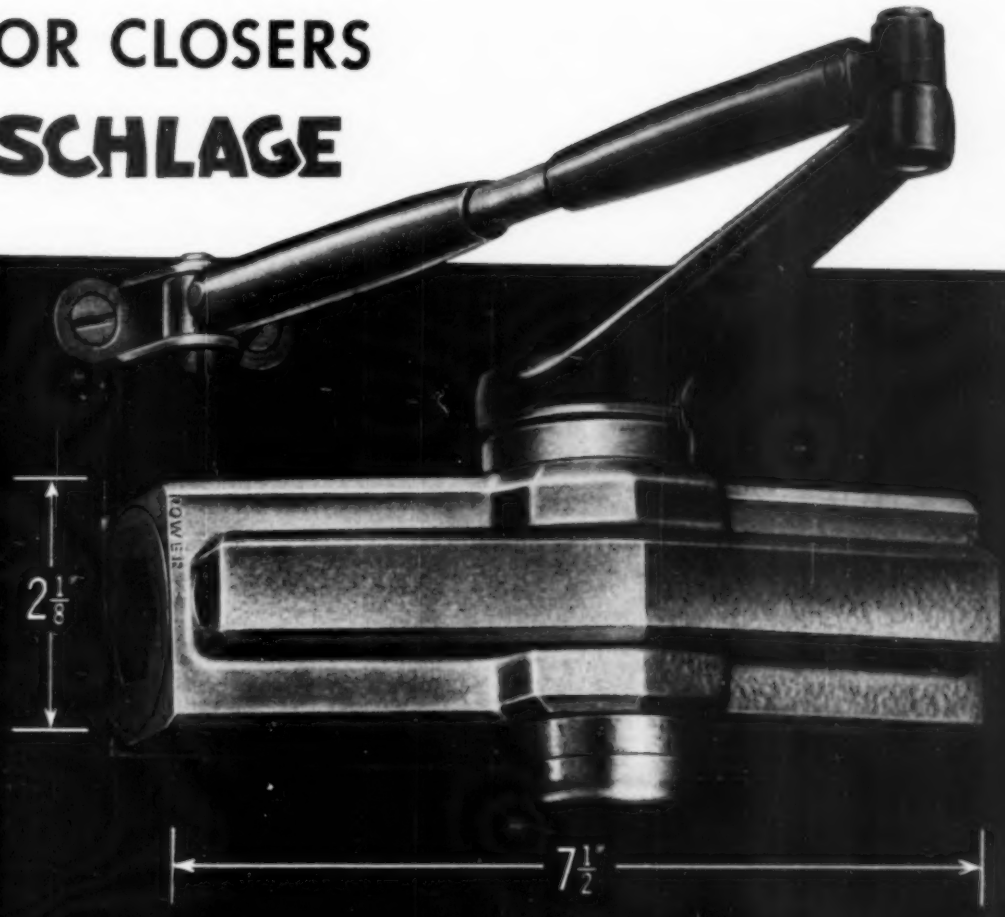

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(Continued from page 174)

train such teachers. The more restricted and self-limited field of noncomprehensive architecture is just as bad off, as we all well know.

The Adams report brings out several very troublesome facts about the education of planners, the worst being that we are lucky if 125 men graduate in one year:

"Information received from the institutions offering degrees in city or regional planning indicate that not more than 125 college-trained planners are entering the field each year, having had anywhere from four to seven years of undergraduate or graduate work of varying quality. Several hundred positions are open to these graduates, who are thus not encouraged to stay in college longer than the minimum necessary to obtain a degree. The total enrolment of all schools offering planning degrees or options, graduate and undergraduate, is today approximately 300—including part-time students—or an average of less than 13 students per school. Even if present job opportunities did not rise above their present level during the next decade, a total enrolment of 500 and a national output of at least 200 graduates would be justified. If a serious attempt is made to meet this objective, schools offering professional curricula in planning will still be faced with this dilemma: How will it be possible substantially to increase enrolment and at the same time raise admission standards and improve the course requirements?

"Also, if the schools are to graduate 200 students each year they must attract at least as many annually, and if admission standards are to be maintained or increased there should be about half again as many applicants as there are students accepted. In other words, means must be found to interest more than 300 persons each year in the possibility of undertaking a program of professional education in the field of planning."

While the above statement highlights the problem, it does not suggest the establishment of more schools to solve it. The geographic distribution of schools granting planning degrees is not satisfactory (a spot map of this haphazard distribution would have been useful in the report). A co-operative effort on the part of planning educators to explore their common enrolment and other problems is clearly needed. Informal meetings on planning education and formal papers are usually presented at the four annual, national planning conferences, but there is no formal, continuing interchange between planning educators. There is not even an organization of planning schools as weak as the Association of Collegiate Schools of Architecture—meaning no offense. I would hope that if such an organization were to develop it would be a formal part of the American Institute of Planners rather than a separate body. The architects and engineers are always astonished and somewhat amused by the num-

(Continued on page 178)

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out of school

(Continued from page 176)

ber of planning organizations there are, considering the minute number of practicing city planners to be found in the United States and Canada, and a separate Association of Planning Schools would cap the absurdity of the present proliferation. Planners, plan yourselves!

architectural design and city planning design

The famous Shuster Committee report, *The Qualifications of Planners*, the British precursor of the Adams report, considered planning as a function of the power of synthesis of many skills and used the word "design" in at least three distinct and confusing ways. I devoted nearly a whole OUT OF SCHOOL column to that report over a year ago. The Adams report is much clearer on the subject of design. In his statements on "Objectives and Scope" he says:

"The relationship of design for physical development to the social and economic aspects of urban planning may be clarified by making a distinction between the four major phases of the planning process: (1) Goal-formation; (2) Survey-and-analysis; (3) Plan-preparation; and (4) Plan-effectuation. Sound physical planning must be based on an accepted social purpose and the determination of such a purpose therefore becomes an important first step in a planning program."

Couple this with Recommendation No. 4:

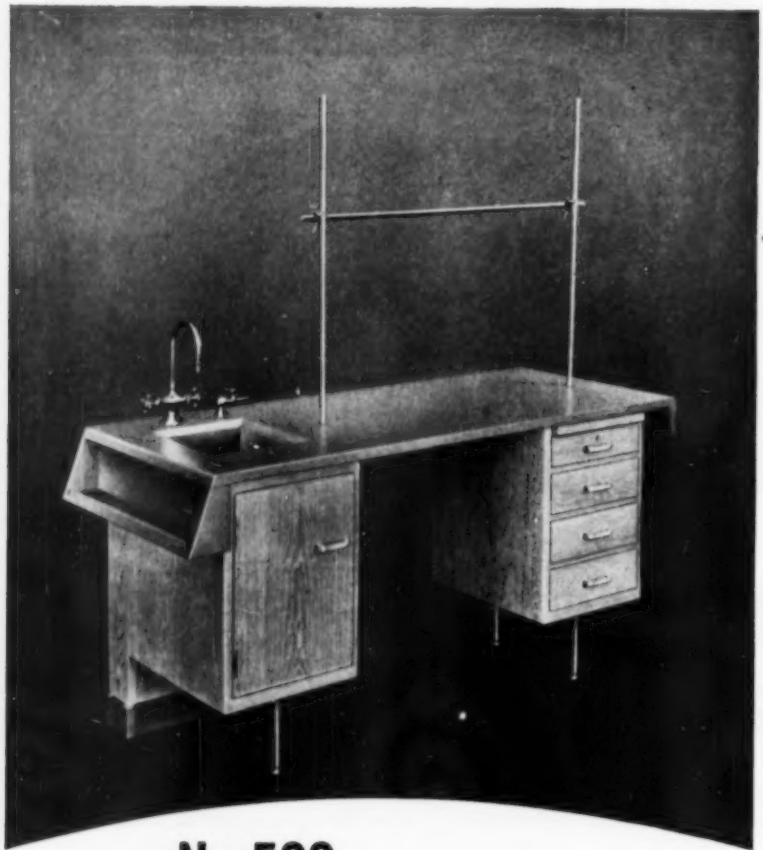
"It is appropriate and desirable that all planning programs should give some degree of emphasis to those aspects of planning which deal with urban form in three dimensions. However, if such programs are highly specialized they should terminate with a degree in Architecture with a major in Planning rather than with a general planning degree. In general, graduate training for planning specialists should not be discouraged, but it should be made clear to prospective students the type of job for which they are being prepared."

This column through the past five years has devoted much space to the concept of *comprehensive architecture*—the architecture which embraces the community, and community building and rebuilding, rather than the single building (architecture, one at a time, in a vacuum, current concept). What Professor Adams has said is right in line with what I have been hammering here. This is the new role of the technical schools.

I personally question the separating of physical planning education from other technical disciplines at the undergraduate level. Adams says on this subject:

"Even in the United States there is not yet sufficient experience with professional education in planning at the undergraduate level to pass final judgment on its effectiveness. In the meantime it would seem advisable to encourage experimentation with the length and con-

(Continued on page 180)



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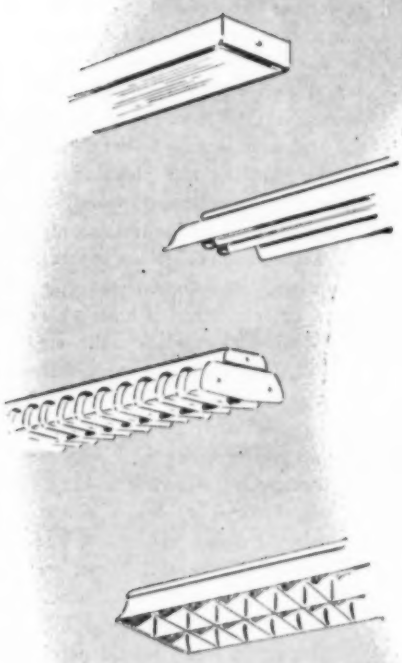

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223

out of school

(Continued from page 178)

tent of such courses and to draw the attention of university administrations to the importance of undergraduate programs in planning as providing the soundest basis for advanced academic work in this field."

While I agree with the point, it seems to me that the design curricula at the undergraduate level *must* be tied into undergraduate architectural design, not as a separate discipline but as an integral part of the training of comprehensive architecture. There is no need for and no advantage to the dividing out of site planning, city planning, environment or space planning, from the other elements of the design training program. In fact, the self-conscious separation of these really nonseparable concepts leads to an artificial series of ideas which confuse rather than clarify the student's thinking. There is no need whatsoever for the undergraduate student to know that he is studying in his beginning years anything other than all the facets of architecture and city building. That is why I like the idea of naming our schools, "Schools of Architecture and Planning." Perhaps, in time, we may call them "Schools of Comprehensive Architecture" or something like that, although this really should not be necessary if we can ever accept the idea that architecture encompasses the broader concepts of city building.

There is every reason to permit city planning options in the later undergraduate years. When a student shows an interest and aptitude in any special technological field, he should be permitted to specialize and explore such a field in detail. In selecting an urban planning option at the undergraduate level, a student may add to his vocabulary and his future usefulness as an architect in urban redevelopment fields, even though he may never elect to take graduate planning instruction or set himself up as an urban planner. There is today, as there will be increasingly in the future, a vital need for architects trained in large-scale redevelopment design and construction (including housing) in con-

(Continued on page 182)

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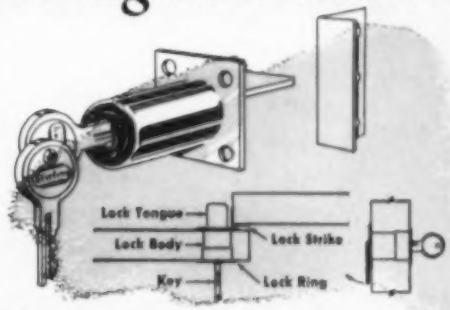

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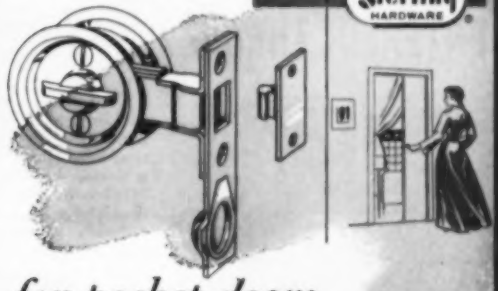

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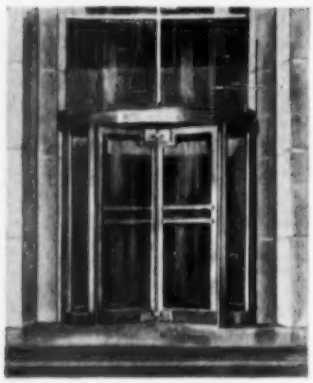

Revolving Door Entrance to new Brown Shoe Co. Building, Clayton (St. Louis), Mo. — specially built of aluminum.
ARCHITECTS: Russell, Mullgardt, Schwarz, Van Hoefen

This new and impressive building in Clayton, Missouri — blended to the prevailing Colonial architecture of that suburban St. Louis community — was one of six honored in the 1953 "Office of the Year" Awards. And of these six winners, three feature an "always open — always closed" Revolving Door Entrance!

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out of school

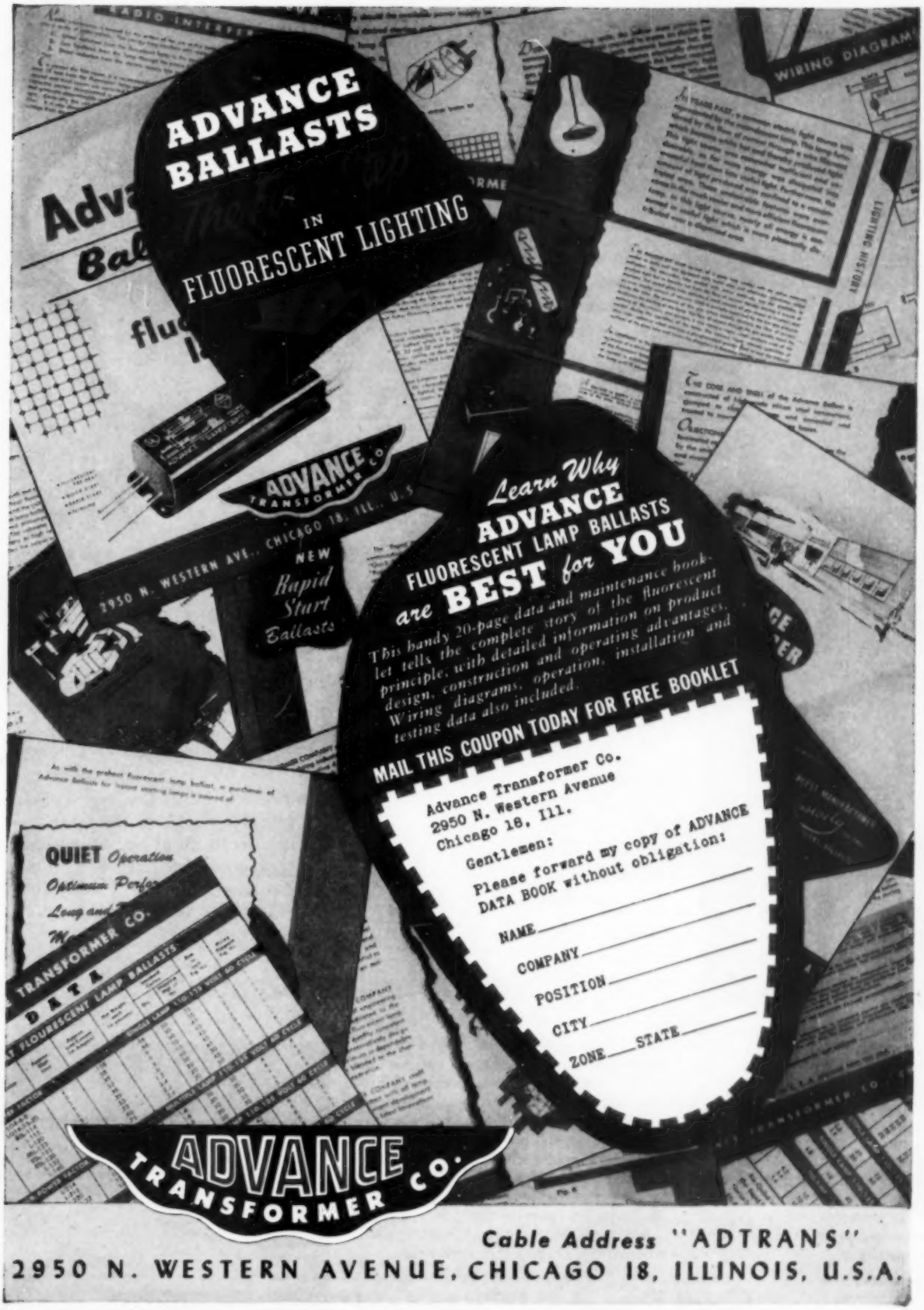
(Continued from page 180)

nection with both development and redevelopment corporations and in a consultant capacity with city planning commissions and other public bodies. Urban Planning options and courses in the necessary social sciences in the fourth and fifth undergraduate years of a curriculum will, in time, help make up for the serious lack of skilled technicians which this country is now facing.

There is one other point I wish to make regarding separate undergraduate planning departments or schools with their accompanying bachelor's degree in planning. In my opinion, the complexity of the subject and the maturity required of its practitioners make such a degree appear to be evidence of greater knowledge and accomplishment than is mentally and physically possible in the time allowed. Carefully directed undergraduate training leading to graduate work, as Adams clearly states, is on the other hand the correct method of preparing for a career in urban planning. But I want to re-emphasize that training for comprehensive architecture at the undergraduate level may or may not lead to a professional urban planning career (with graduate training in the specialty), but that the opportunities today for work in urban architecture and large scale design are so varied and so great that the architectural schools are missing their greatest role in the modern world if they do not all expand their scope and activity.

I have omitted here, as not of immediate interest to the readers of this magazine, discussion of the training of urban planners in the nonphysical fields—the men who will serve as planning administrators, lawyers, urban sociologists, and public officials at large. This is another subject and for other discussions. However, their training is closely allied to that of the physical planners with whom they must work. Therefore interdepartmental and intercurricula committees in the universities are fundamental to the broadening and "generalist" approach. Many schools are already developing team projects in which students in other

(Continued on page 186)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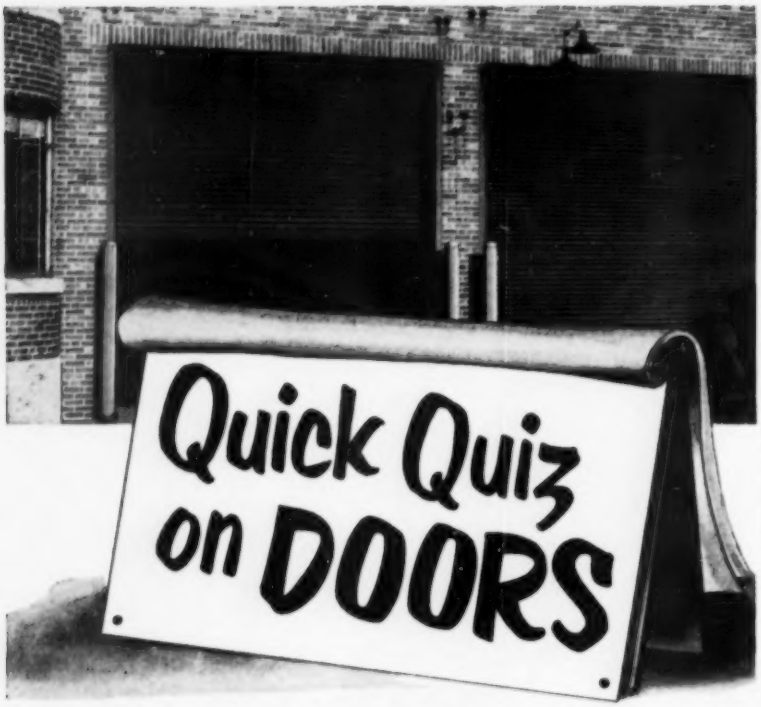

QUESTION: How can we be *sure* of door efficiency?

Answer: The upward-coiling curtain of interlocking steel slats, originated by Kinnear, *is the key to many basic door advantages.*

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Answer: You can make full use of all floor and wall space around Kinnear Rolling Doors, inside and outside the opening, at all times. *By coiling straight upward, they operate* entirely within the space they occupy when closed.

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Answer: Yes. Kinnear Rolling Doors use no ceiling space, except for the compact hood area into which the curtain coils. This hood can often be recessed in the wall, or mounted outside the building, so that ceiling heights can be held to minimum, cutting building costs.

QUESTION: Are the doors easy to operate?

Answer: Strong torsion-spring counterbalancing makes even manual-lift Kinnear Doors extremely easy to operate. They are also ideal for motor operation—no lengthy operating cables, no projecting tracks, no bulky mechanism. Push-button controls can be placed at any number of points.

QUESTION: What about protection?

Answer: Kinnear Rolling Doors guard every opening with a curtain of steel anchored in steel jambs from floor to ceiling—a fire-resistant barrier against wind, weather, theft, or vandalism.

QUESTION: Can we count on low maintenance costs?

Answer: Many Kinnear Rolling Doors have been in continuous daily use upwards of 20, 30 and 40 years without repair or maintenance expense, *as proved by reports from many users.*

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SAVING WAYS IN DOORWAYS
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out of school

(Continued from page 182)

disciplines are working on urban planning problems in association with the design technicians. It is a good deal, and a precursor to such essential association in co-operative work in real life.

conclusion

We will discuss the two recent surveys of architectural and planning education frequently in the future. Neither exhausts the subject or points to final results. Unfortunately, as is so often the case, both surveys were run concurrently, both impinge on the other, and yet they were each written as though the other did not exist. They must both be studied together, and *faute de mieux*, this column, I suppose, must serve as the weak vessel to pull them together.

•

Note for historians: This issue of OUT OF SCHOOL begins the sixth year of this column on architectural education. Doesn't somebody else want to take the quill from my palsied fingers and carry on the torch? Even my metaphors don't mix well any longer. C. F.

notices

nightclub lighting

MAX BORGES, JR., Architect of Tropicana night club in Havana, Cuba, featured in June 1954 P/A, points out that designation of the lighting on page 137 was misleading since the ceiling fixtures labeled "spotlights" are adjustable units by Swivelier Company, Inc.; whereas the line to those should have stopped under the ceiling arch, because behind *that* are the Kliegl Bros. spotlights illuminating the curtained wall segment.

P/A congratulates

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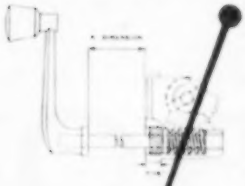
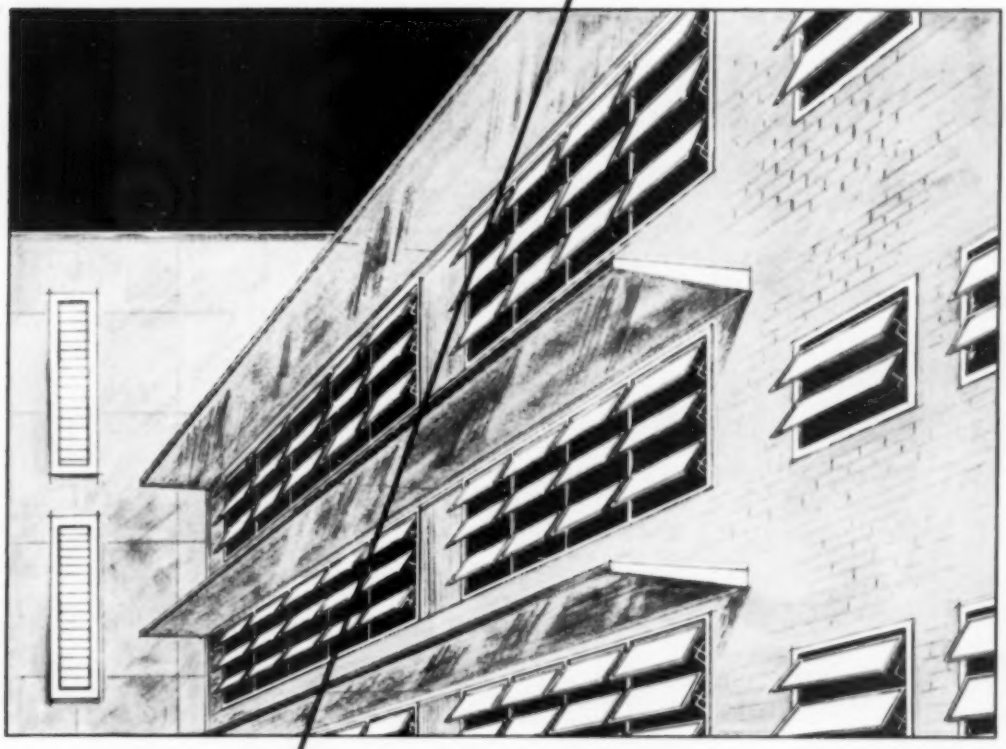
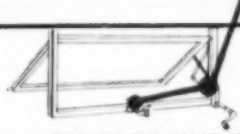


THIS:

STRIP-PROOF OPERATOR HAS HEAVY-DUTY TORSION BAR BUILT IN CAM LOCK. UNLOCKS. OPENS. LOCKS IN ONE OPERATION.





NOT THIS: BECAUSE THE UALCO STRIP-PROOF OPERATOR HAS NO EXTERNAL LOCKING GEAR. IT COMPLETELY ELIMINATES ALL POSSIBILITY OF STRIPPING GEAR THREADS THROUGH FAILURE TO UNLOCK WINDOW.

PLUS THIS:

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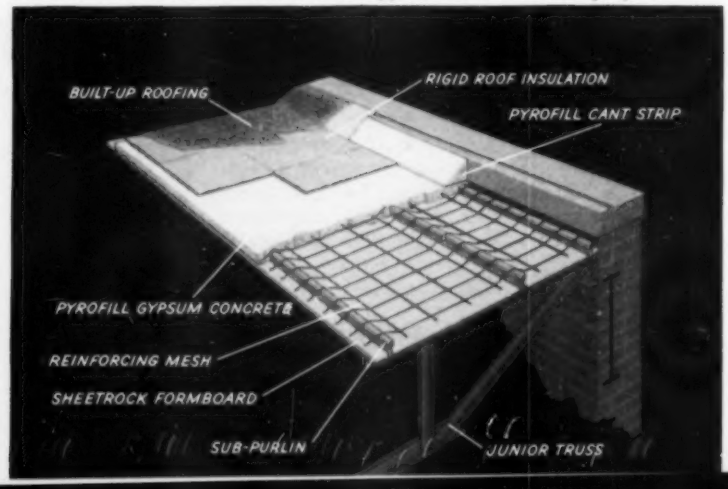
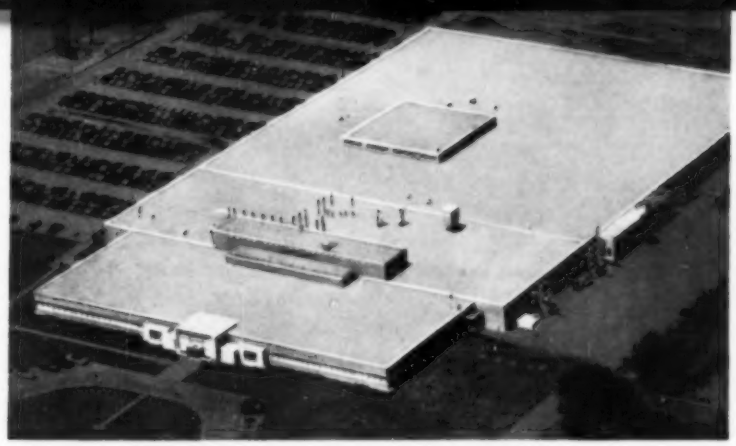
PYROFILL Roof Deck at exterior wall—typical detail from this project.





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books received

New Ways of Servicing Buildings. Edited by Eric de Mare. The Architectural Press, 9-13 Queen Annes Gate SW1, London, England, 1954. 228 pp., illus., 30s

Freehand Drafting for Technical Sketching. Anthony E. Zipprich. D. Van Nostrand Co., Inc., 250 Fourth Ave., New York 3, N.Y., 1954. 176 pp., illus., $3.40

The Architecture of Humanism. Geoffrey Scott. Doubleday Anchor Books, Doubleday & Co., Inc., Garden City, N. Y., 1954. 197 pp., $.75

Space Heating with Solar Energy. Edited by Richard W. Hamilton. Albert Farwell Bemis Foundation, Massachusetts Institute of Technology, Cambridge 39, Mass., 1954. 161 pp., illus., $2.85

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monuments to "universals"

Foundations of Modern Art. *Amadée Ozenfant (Translation by John Rodker). Dover Publications, Inc., 1780 Broadway, New York, N. Y. New American edition, augmented, 1952. 348 pp. $6*

Pedagogical Sketchbook. Paul Klee. *Frederick A. Praeger, Inc., 105 W. 40 St., N. Y. 1953. 60 pp. $3*

Not that this reviewer wants to arouse nostalgia for the Lost Generation—but, more and more, the period between the two World Wars, seen in retrospect, takes on the glow of a Golden Age. Despite economic-political chaos, art (where left to grow freely) was opening new realms, consolidating into new and meaningful styles, irrevocably adding to man's awareness. It is doubtful that the same fresh atmosphere of freedom survives anywhere in the world today. Ozenfant's *Foundations* sums up the Purist experience and is prophetic of Moholy-Nagy's late harvest, *Vision in Motion*, as it casts a roving eye over the hydra-headed movements of modern art up to 1928. Klee's *Sketchbook* is the quintessential outcome of his mature Bauhaus years. What both works try to do is to present the world from the designer's viewpoint—to see art as a way of life. For the 20th Century artists, as also for many nonartists, art becomes the Archimedes fulcrum from which to move the world.[1]

Ozenfant unconsciously (or ironically?) betrays the cultural Gold Rush temper of his time—when he writes for the second edition (1930) ". . . in these two years no movement *really* new has taken place in the Arts, Letters, or in Thought."

Here he elaborates the stand which he and Ch. Jeanneret (Le Corbusier) had taken in 1918, in *After Cubism*, which was,

"an optimistic, lyrical song on beauty and lesson of machines and on some of their products, on buildings for use, and on the part to be played by science in art worthy of our time. It also criti-

(Continued on page 192)

[1] *On the decline of other ideologies (business, politics), see David Riesman's* The Lonely Crowd. *Yale University Press, 1950.*

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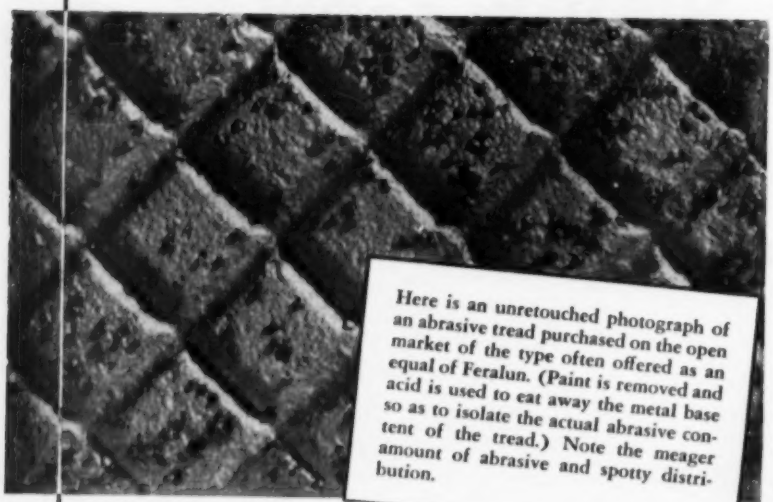
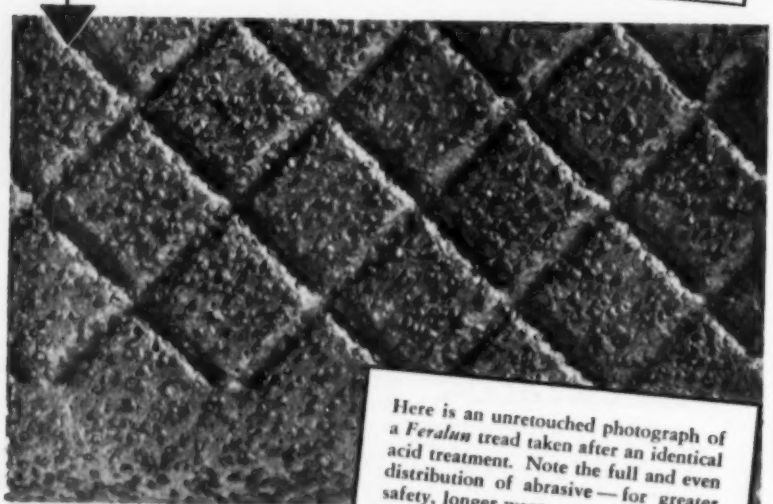


Here is an unretouched photograph of an abrasive tread purchased on the open market of the type often offered as an equal of Feralun. (Paint is removed and acid is used to eat away the metal base so as to isolate the actual abrasive content of the tread.) Note the meager amount of abrasive and spotty distribution.



Here is an unretouched photograph of a *Feralun* tread taken after an identical acid treatment. Note the full and even distribution of abrasive — for greater safety, longer wear.

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AB117

AMERICAN ABRASIVE METALS CO., IRVINGTON 11, N. J.

reviews

(Continued from page 190)

cised the condition of Cubism at the time, but principally it criticised the followers of the Cubist masters. We gave our Tablets of the Law of Purism, stating that what we wished to express in art was the Universal and the Permanent and to throw to the dogs the Vacillating and the Fashionable."

This viewpoint, reiterated in their influential journal, *l'Espirit Nouveau* (from 1920 to 1925), paralleled the efforts of *De Stijl* and of other movements but took on a highly French cast. The Purist works, with their cool, thin, parallel planes, tasteful curves, the majestic functional intimacy of their pipes, bottles, or mandolins — breathed the classicism, the mature self-assurance that is Le Corbusier's hallmark. Such a humanized classicism not only has been at home in France but had become deeply inbred, from Descartes and Poussin to Ingres and Seurat. (Ozenfant almost exclusively refers to French art and to French thinkers.) Classicism supporting a machine esthetic is doubtless what helped the French designers to avoid the pitfalls of naive functionalism. Ozenfant's father, incidentally, worked with the ferro-concrete pioneer, Hennebique.

Two further themes rooted in French experience weave in and out of the text. Paleolithic art, still admired and marvelled at today, is a symbol of man's constancy, his unchanged sensibilities, and the central role of art in culture—art as psychic control. The other theme is Revolution, a tradition in art as in politics. Its magic weapon was reason; its target was the Academy (and ready-made ideas); its strategy was satire. And so we are given a fantastic visual inventory of civilization "from the origins to 1928," a wittily selected "time capsule," an uninhibited "art students' ball" shot with mercurial streamers of irony and persiflage. Parading across the pages of the book are naked Africans with saucer lips; the obese Great Mother or "Venus" of the cave dweller, who rivals in voluptuousness the Coney Island Momma; Picasso paintings and

(Continued on page 194)

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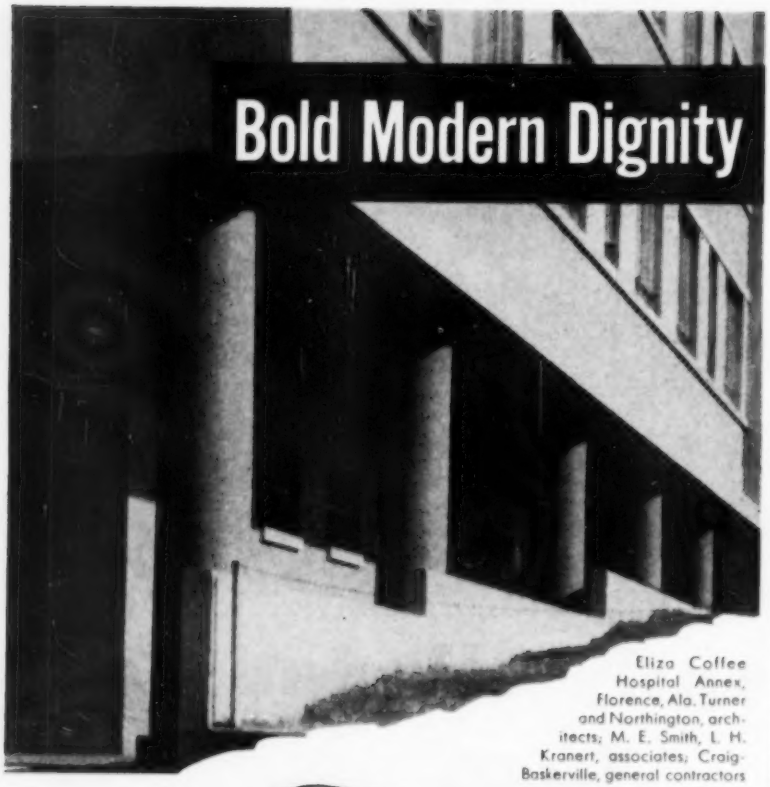

Eliza Coffee Hospital Annex, Florence, Ala. Turner and Northington, architects; M. E. Smith, L. H. Kranert, associates; Craig-Baskerville, general contractors

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reviews

(Continued from page 192)

Roman sculpture; Sir Austen Chamberlain seen in a distorting mirror; the poet-statesman, Gabriele d'Annunzio, and his dried-up twin, Pharoah Seti I; ladies being painted by students; cows, by ladies; a horse contemplating his portrait; also magnetism, electricity, freak furniture, air views, telescope views, micro views. The transitory—hat advertisements, commercialized fads, and fashions: also the constant—an Egyptian chariot wheel and its descendant of today, the wheel of a Bugatti racing car.

And the goal of all symbol and thing-making? Of art? Of science? Of all the flying and tunneling, engineering and manufacturing? To cheat death, to create an illusion of *order*, of immortality: Man's temporary triumph over the all that is chaotic and elusive in life. "Science, like other arts, is an art of illusion: its crystal clear apparatus is so diaphanous, that the beholder imagines he grasps the image of the universe. That illusion is beneficent. The aim both of science and art is to create fantasies which solace us for reality. For an instant of time we can be wholly occupied by them: evasion."

"Once upon a time," Ozenfant reminisces, "God was God . . . Beauty was Beauty. Good was Good, and two and two made four on earth, in heaven, and every possible universe . . . Scientists, at least the majority of them, no longer seek to discover the secret of things . . . They are no longer even very sure they understand what such an expression means."

Witty, eloquent, informative, and *sympathique*, Ozenfant's survey of his time is hardly scholarly or well balanced: no detached spectator he, try as he may to take the long-range view. There is too much praising and condemning of Picasso and the Picassoids (by the Purist canon). Constructivism ("interesting") and *De Stijl* ("ornamental") come in for no more than a half page. A jarring note sounds in the new edition where the author unnecessarily, I think, tries to set history right

(Continued on page 198)

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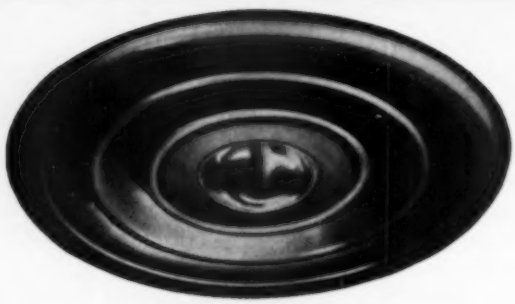
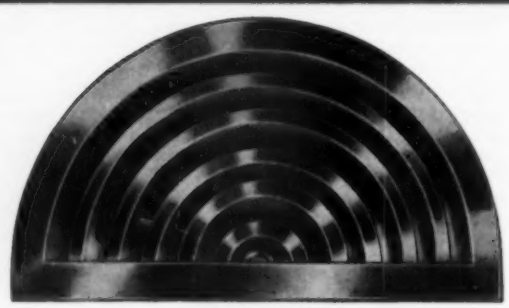


TYPE PLF
Flush type, fixed pattern diffuser combined with light fixture

TYPE S
Flush type, fixed pattern diffuser



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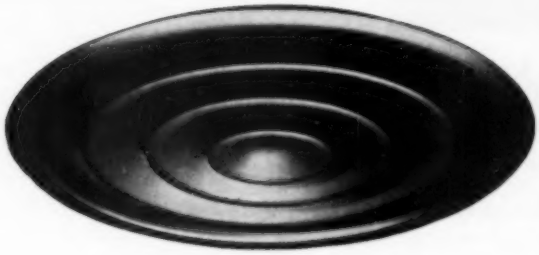

TYPE PS
Stepped-down type, fixed pattern diffuser

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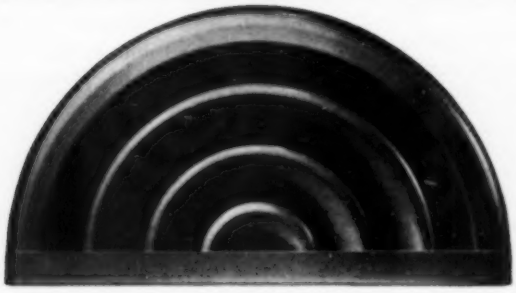

TYPE PH
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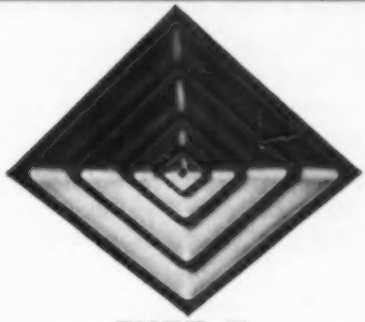

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Flush type, fixed pattern square diffuser

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reviews

(Continued from page 194)

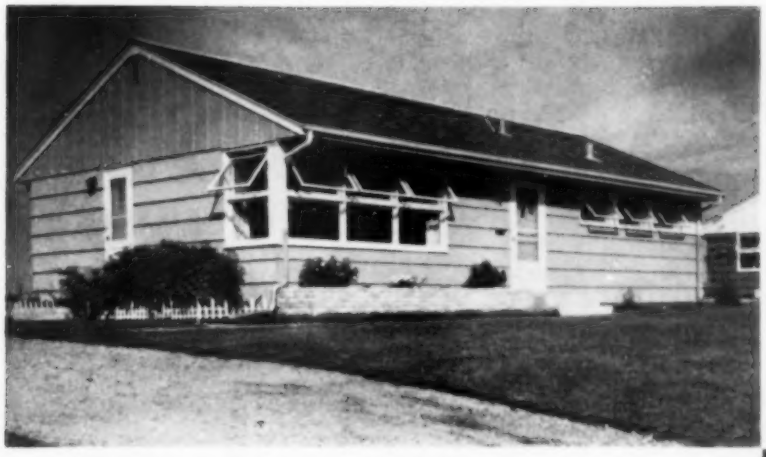
with regard to himself and Leger and Mondrian and Le Corbusier—but the *Ozenfant terrible's* imbalance and ramblingness are easily forgiven, in view of his verve and stimulativeness. The epigrams—and there is one in every paragraph—are not only verbal but, more significantly, pictorial. The *Foundations of Modern Art* is a *tour de force* of visual editorship (more apparent then, than now); an epitome of modern consciousness; a monument to Man the Symbolizer; a collage that has become a milestone.

•

Paul Klee's *Pedagogical Sketchbook* appeared in 1925. It was the second of the 14 Bauhaus books and describes the content of Klee's course there. It could profitably be read today by many who, when talking about Bauhaus, are referring to an image more in their own mind than in reality. Where Ozenfant is ambitious, encyclopedic, and diffuse; Klee is modest, slender, and concise. This is typical of the man who, as Sibyl Moholy-Nagy points out in her excellent short introduction, spoke of his art as *devotion to small things*. "In the Microcosm of his own visual world he worshipped the Macrocosm of the Universe. . . Through observation of the smallest manifestation of form and interrelationship, he could conclude about the magnitude of natural order. . . He loved the natural event; therefore knew its meaning in the universal scheme. . . The phenomenon perceived and analyzed was investigated until its significance was beyond doubt." Such a view of the world occurs among the English and American writers: in Wordsworth, in Thoreau, in Meredith's remark, "You of any well that springs, may unfold the heavens of things," and in Whitman's,

"I believe a leaf of grass is no less than the journey-work of the stars,
And the pismire is equally perfect, and a grain of sand, and the egg of the wren . . .
And the narrowest hinge in my hand puts to scorn all machinery . . ."

(Continued on page 202)



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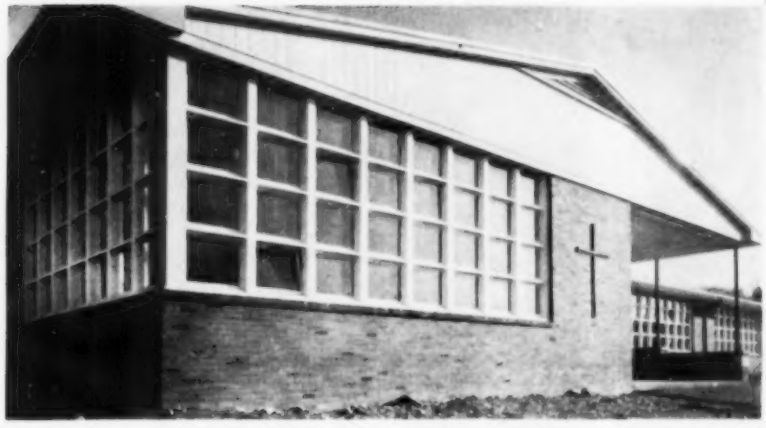

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• **LONG SPAN** In addition to its acoustic qualities, Robertson Q-Deck permits longer spans. This means fewer supports, faster installations, lower cost. This is the gymnasium at St. Edward's High School, Lakewood, Ohio. George S. Rider Company, engineers.

• **ACOUSTIC CEILING AND ROOF DECK** Robertson Q-Deck is as functional as it is attractive. Varying Noise Reduction Coefficients are easily and inexpensively obtained. Write for Acoustic Data on Robertson Q-Deck. Shown is the Cedarville (Ohio) School, John L. Kline, architect.

• **BRIGHT CORRIDORS** Daylight is free, so why not use it. Robertson Corrugated Wire Glass Sash is maintenance-free, economical and efficient. George Washington School, E. Moline, Ill., M. R. Beckstrom, architect.

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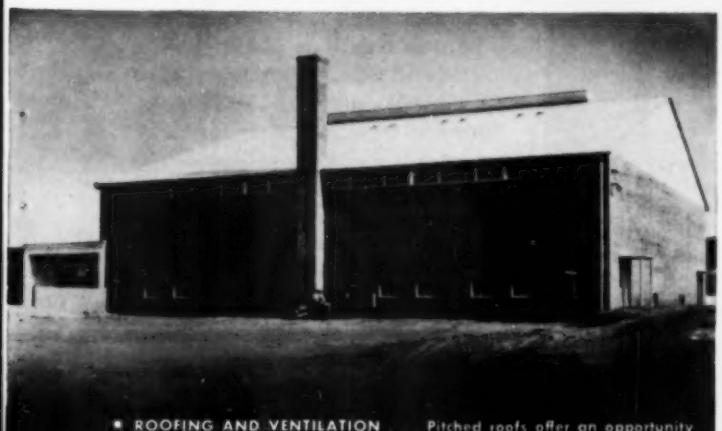
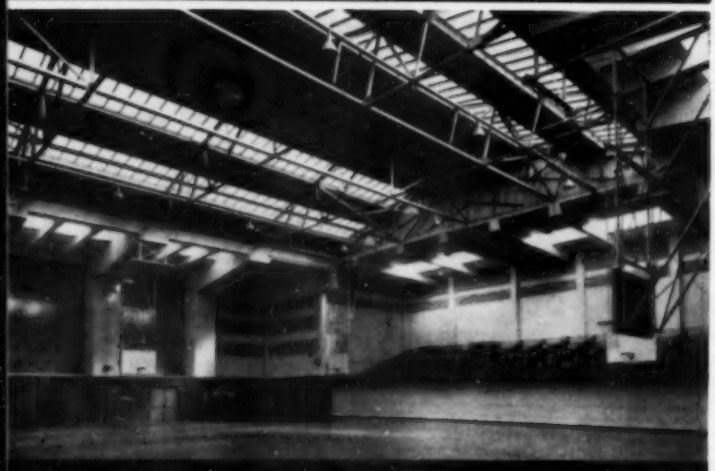


• **ROOFING AND VENTILATION** Pitched roofs offer an opportunity to use Robertson Galbestos (zinc bonded asbestos protected steel) and Robertson Ventilators. This modern gymnasium designed by Gregson & Ellis, Atlanta, Ga., shows both of these cost-cutting Robertson products.

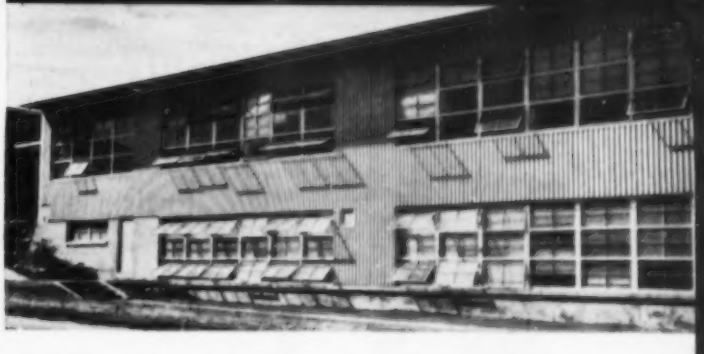
• **BI-LATERAL LIGHTING** At the St. Thomas More School near Niagara Falls, Ontario (Arthur B. Scott & Associates, architects) Robertson Skylights give an assist to sash in classrooms. Robertson Q-Deck can be recognized as the roof construction.



• **GLARELESS OVERHEAD LIGHTING** There is no glare either to contestants or spectators when daylighting is handled like this. These are Robertson Corrugated Wire Glass Skylights at Herbert Hoover High School, San Diego, California.

• **CANTILEVERED CANOPIES** Long span Robertson Q-Deck permits the long overhang desired for covered walkways. This fine example is by Gordon Stafford at his Lincoln (California) High School.

• **INSULATED WALLS — QUICK** Robertson Q-Panels are dry, clean fast construction with unlimited architectural possibilities. Above, they are shown combined with masonry at the Booker T. Washington School at Shreveport, La. (Van Os & Flaxman, architects). Below, Q-Panels at the Carmichael School at Richland, Wash. (J. Gordon Turnbull, Inc., designer)



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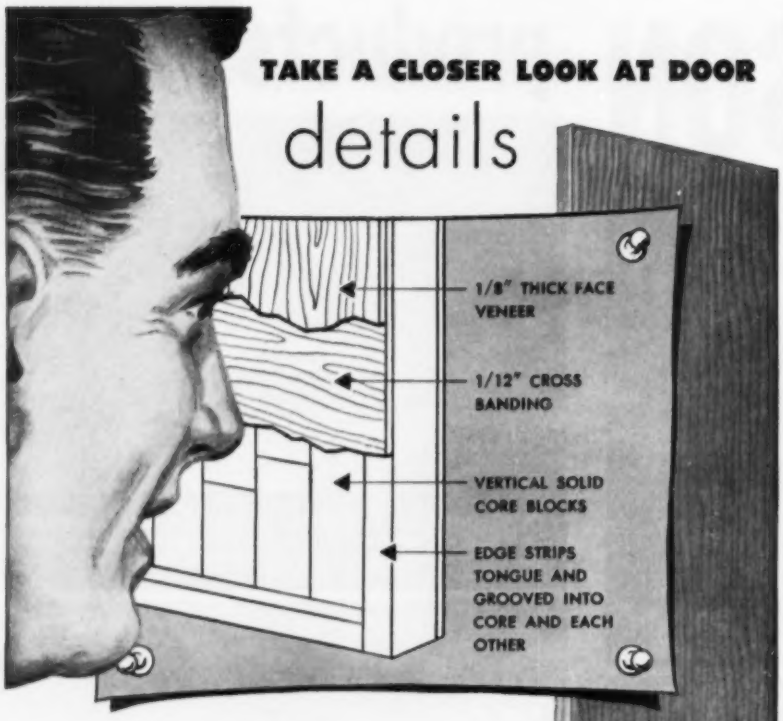
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reviews

(Continued from page 198)

But that which is in the specifically German tradition, expressed by Klee, is the Faustian feeling that Nature's secrets are of untold depth, that phenomena are surrounded by an aura of spiritual meaning, yet by toil or fervor the initiate may find the key. There is something of mystic yearning in the nostalgia and memories, the exotic and archaic drawings of a Klee; Klee is indeed the perfect illustrator of the 18th Century German Romantic (later Surrealist-acclaimed), Novalis:

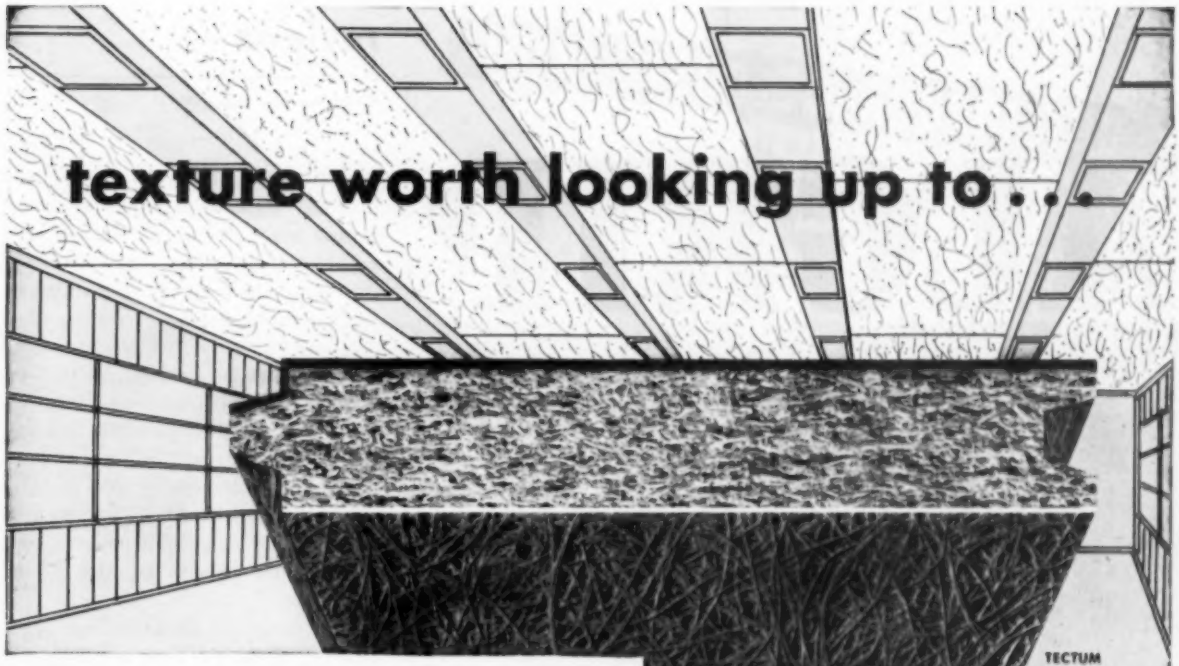
"Various are the roads of man. He who follows and compares them will see strange figures emerge, figures which seem to belong to that great cipher which we discern written everywhere, in wings, eggshells, clouds and snow, in crystals and in stone formations, on ice-covered waters, on the inside and outside of mountains, of plants, beasts and men, in the lights of heaven, on scored disks of pitch or glass or in iron filings round a magnet, and in strange conjunctures of chance. In them we suspect a key to the magic writing, even a grammar, but our surmise takes on no definite forms . . ."[2]

The *Pedagogical Sketchbook*, which should be read *after* one has come to know and love Klee, outlines a course of study which should make nature yield some of its hidden but universal laws. It is a lyrical, allusive Euclid of the dynamics of form, starting from simple elements. Form, here, is seen in its fullest meaning: not form as against content and significance, but form considered as inherently meaningful, expressive, symbolic. It is, indeed, in a theater of form that the drama of our existence unfolds.

Mrs. Moholy-Nagy characterizes Klee's methods as "inductive." I am not sure that this description is adequate. If we are to look for philosophical parallels, we had perhaps best think of those investigators who broke down the barriers between subjective and objective worlds: the worlds of Freud and of the Swiss child psychologist, Piaget. Klee's whole manner of thinking, with its animism

(Continued on page 204)

[2] *Novalis*, The Novices of Sais, *with Sixty Drawings by Paul Klee, Preface by Stephen Spender. Curt Valentin, 32 E. 57 St., New York, N. Y., 1949.*



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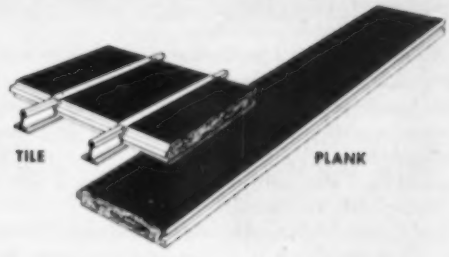

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reviews

(Continued from page 202)

and playfulness and instinctualism, links it to the world of the child—or rather to that world that previously had been relegated to the child. This is the world that Piaget explores: the child's dreams, his elementary notions of matter, number, and causation, his "metaphysics." One thinks of the German philosophers, such as Meinong and Husserl, whose *eidetic realism* tries to describe and universalize the "givens" of consciousness. Or, again, there comes to mind the neo-vitalist, H. Driesch, who is said to have elaborated an entire philosophy of order from the reproductive behavior of the sea urchin.[3]

The *Sketchbook* consists of four parts. Part One deals with Line and Structure. The line is a point taking a walk. This most active line may move freely, circumscribe planes, or merely passively delimit planes. Various kinds of structures are considered: additive, repetitive in a single direction, or along two (the chessboard). In nature, such structural situations occur in cells and fibers of bones, tendons, and muscles. These, in turn, are organized into kinetic groups of which the muscles are active, the bones passive, tendon mediary. This triadic analysis is worked out in the lovely sketch of Waterwheel and Hammer, again in the Watermill, in the Plant, and in the Circulatory System where activity is assured by the beating Heart.

Part Two deals with that ineluctable given: the three-dimensionality of the world (top-bottom, left-right, front-back). Vertical, horizontal, and shifting axes are demonstrated in relation to the human seeking his balance in the world. Asymetrical Balance is demonstrated in the Scale and the Tower of Masonry.

Part Three deals with movement: the Gravitational Curve; the Plummet sim-

(Continued on page 208)

[3] *In similar spirit, the German educational pioneer, Froebel (1782-1852), invented his hand games for children. For instance, the Bridge where "the two thumbs make the piers, the fingertips of the right and left hand meet to form a bridge. . . . To find or create a bond of union between seemingly opposed and antagonistic objects is always a beneficent and rewarding deed.*

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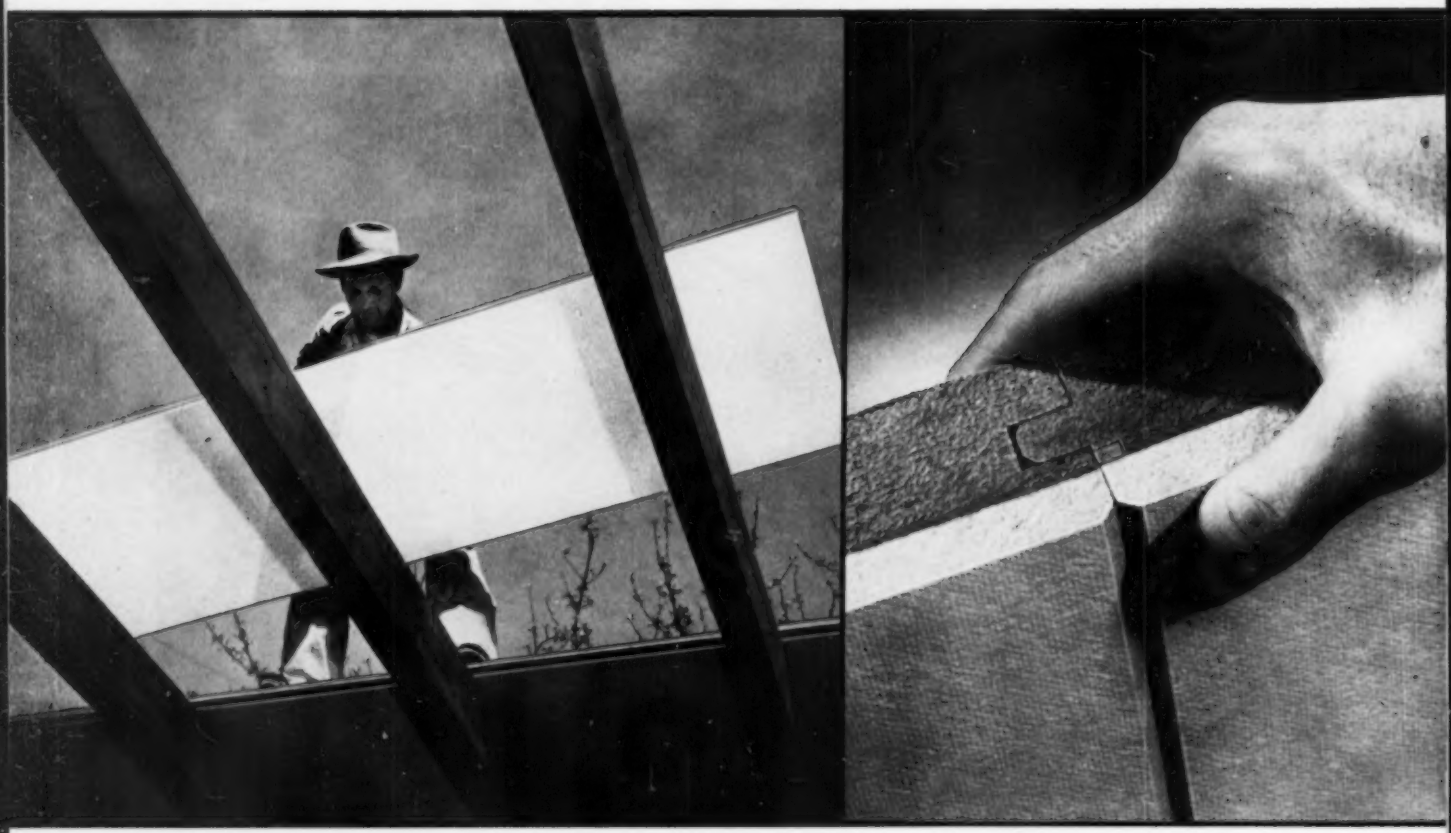

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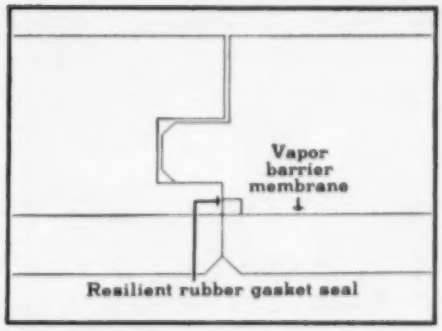

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reviews

(Continued from page 204)

ple-mindedly seeking the earth's center. But interaction with diverse elements and regions (earth, air, water) determine more varied forms of behavior: the Bullet's orbit of changing speed; the downward bouncing Stone, the Meteor which "barely escapes the peril to be tied forever to the earth, and moves off into the stratosphere, gradually cooling off and extinguishing."

The Symbols of Form in Motion bring us to the Spinning Top, the Pendulum, the Circle, and the Spiral; as well as various visualizations of the movement of color. "Shortening the radius (of the spiral) narrows the curve more and more, till the lovely spectacle dies suddenly in the static center . . . direction determines either a gradual liberation from the center through freer and freer motions, or an increasing dependence on an eventually destructive center. This is the question of life and death; and the decision rests with the small arrow." The Arrow itself is analyzed as a symbol of human striving. "Be winged arrows, aiming at fulfillment and goal, even though you will tire without having reached the mark."

The book in its present form is faithful to L. Moholy-Nagy's design and typography for the original Bauhaus book—and the translation has been much amended since the first English edition. The result is not so elegant as the earlier, unfaithful horizontal format, while the English lettering of the sketches inevitably loses the refined, spidery, scrawly, delicateness of Klee's own hand, so familiar to lovers of his graphic work. But most important is the message! Pointing up an inherent symbolism in the small and trivial phenomena that collectively form everyday life, Klee makes us aware that the slightest thing done or designed holds deeper, more universal meaning than we are wont to admit.

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A hidden link between Ozenfant, Klee, and many other artists active around 1925 was their belief that their art could express *universals*. Ozenfant finds them in history and technics, Klee in the world

(Continued on page 214)

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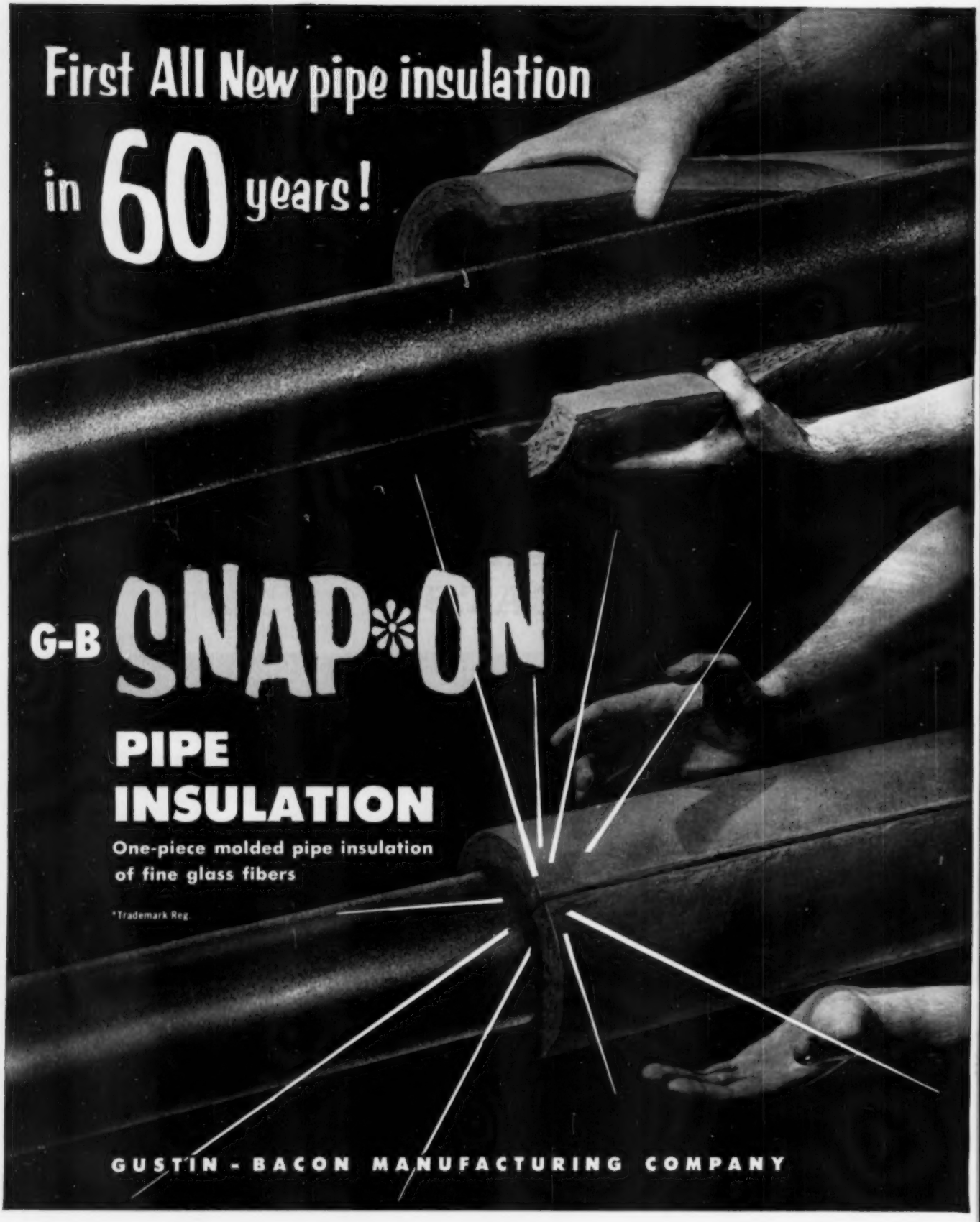
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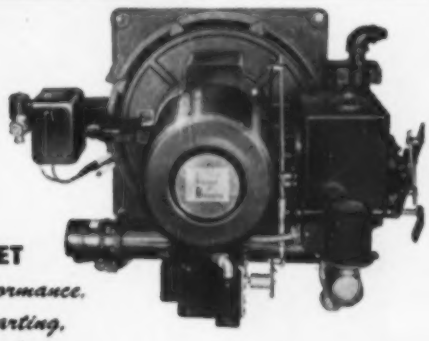

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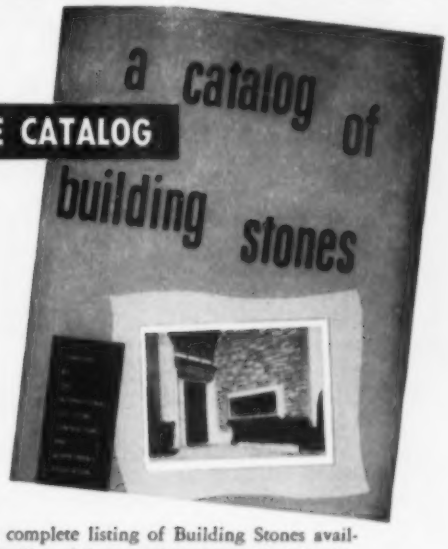

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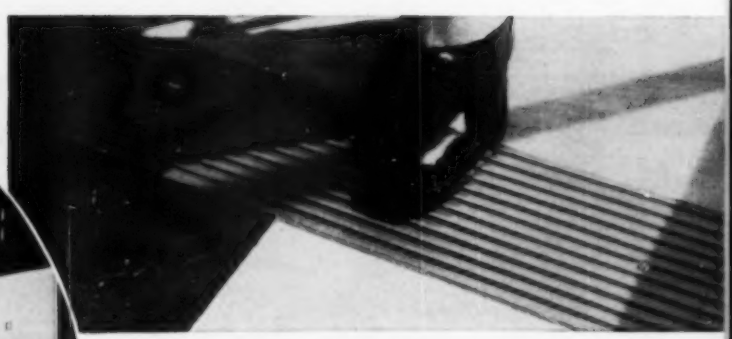

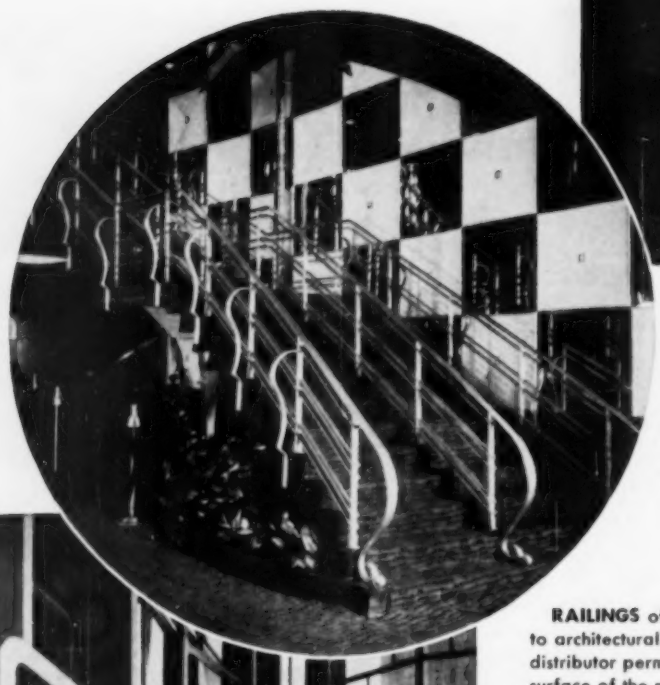

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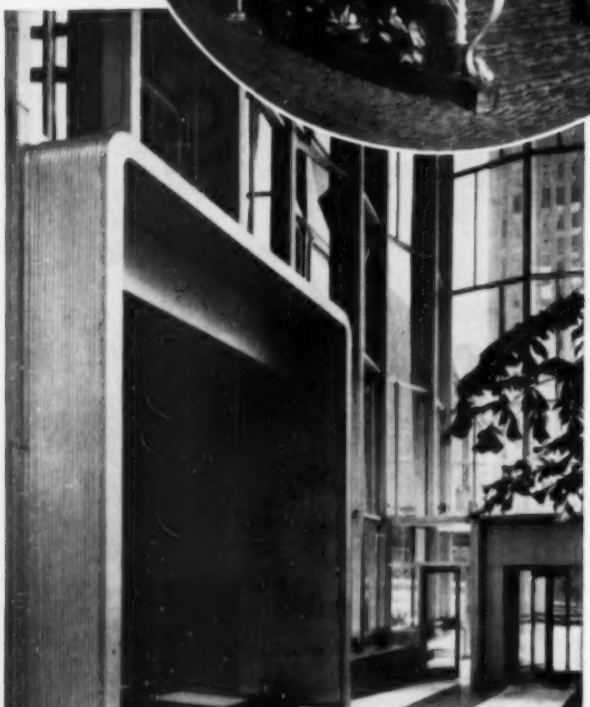


RAILINGS of Alcoa Aluminum are among the earliest applications of aluminum to architectural use. The selection of railing sections in stock at your nearby Alcoa distributor permits their adaptation to any architectural treatment. The soft, lustrous surface of the metal is pleasing to the eye and to the sense of touch.

Where the major consideration of safety is combined with the ability to stand up under severe use, Alcoa offers a pipe-railing system in two sizes of pipe and flush fittings. Designed to meet the most rugged railing requirements at a reasonable cost, the system provides speed of erection and a crisp, clean, projection-free railing—easy to maintain.

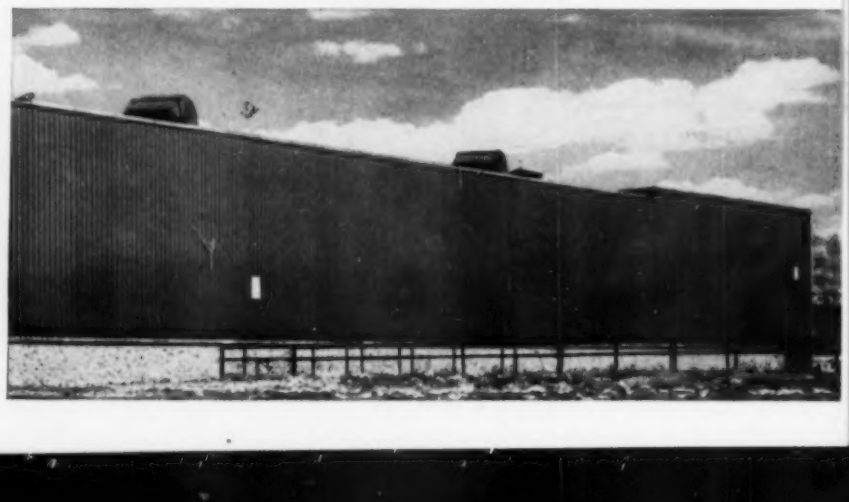
FOR DESIGN FLEXIBILITY STOCK AVAILABILITY FABRICATION ECONOMY

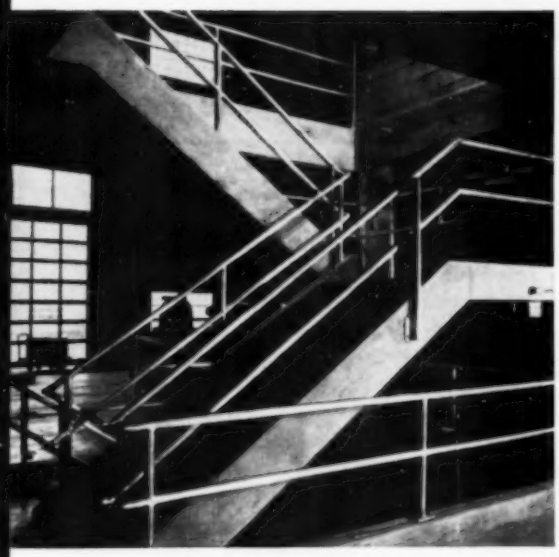
SHEET METAL PRODUCTS of Alcoa Aluminum can be used to channel and direct warm and cold air, to reflect light and heat, to cover, to protect and to embellish. The range of sheet sizes, thicknesses, alloys and tempers in Alcoa Aluminum distributor stocks gives the designer a selection for any use. Specially processed forms of sheet include Alumilite* sheet for attractive appearance, lighting sheet for illumination problems, tread plate for special flooring requirements and patterned sheet for surface decoration. Corrugated sheet is available for complete roofing and wall system with all necessary accessories.

*Trade-Name of Aluminum Company of America

TRIM AND DECORATIVE SHAPES sections available in the stocks of Alcoa Aluminum distributors have many architectural uses. Glazing members, door edgings and jamb sections, interior moldings and pilasters have the crispness of edge and cleanliness of surface which will stay that way under long use.

A new fascia system is available which has specially designed terminal members and in which all fasteners are concealed. The soft highlights of its radii and the delicate shading of the slightly concave contours of its raised elements produce a wall surface of great interest and dignity. It is especially suited to large walls and framing trim where its distinctive texture can get full play under varying light.

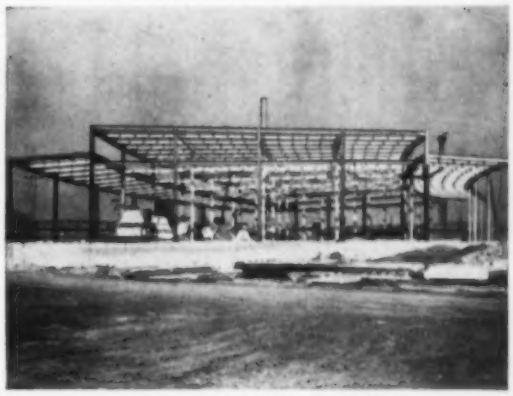




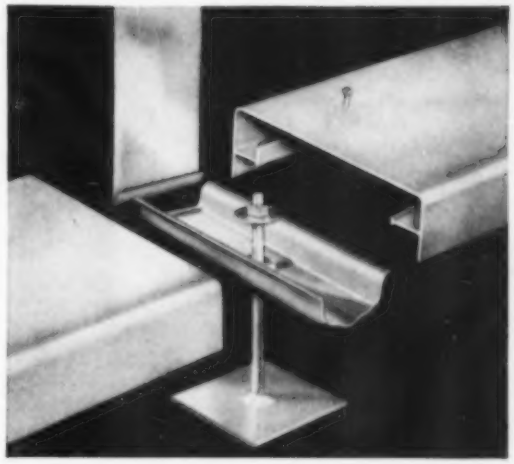
TUBE AND PIPE of Alcoa Aluminum are readily available in a wide range of sizes, cross sections and wall thicknesses from your local Alcoa distributor. Tubing of square, rectangular or circular cross sections has a wide variety of applications in special architectural details such as decorative partition screens, railings and lighting fixtures; for light structural systems such as flexible exhibition and shelving units and for light load bearing columns and posts. Alcoa's tube and pipe give the architect a medium for flexibility of design.

STRUCTURAL SHAPES of Alcoa Aluminum are increasing in usage in commercial, industrial and residential buildings. There is mounting appreciation among designers that aluminum members can do both a structural and a decorative job. Good surface integral with structural strength leads to economy through simplified design and erection since structural members may stand exposed without need for concealment by facing materials.

Exposed or concealed, structural aluminum requires little maintenance. The dimensional accuracy, workability and ease of handling have a strong appeal to the fabricator.



COPINGS AND GRAVEL STOPS, engineered by Alcoa, including all necessary accessories, are available and ready for assembly from our warehouse stocks. Weather protection, positive joint drainage, more adequate anchorage and greater strength features have been designed into these outstanding new assemblies.



ALCOA® ALUMINUM ARCHITECTURAL STOCKS

WINDOW SILLS of Alcoa Aluminum are a popular choice by architects for weather protection of masonry joints, maintenance-free service, attractive appearance and adaptability to various opening conditions.

A wall opening requires one of two sill applications:
A unit sill or a continuous sill. Alcoa's Type C sill is designed as a unit sill for openings of not more than six feet in width. It is best secured by using the lug method of installation. Alcoa's Type AA sill is suitable as either a unit sill for openings up to 20 feet wide or as a continuous sill for openings over 20 feet. It is set by means of anchor clips which are attached to the supporting wall at maximum intervals of three feet. The Type AA sill suggests a new concept of fenestration. It opens up fresh possibilities for wall treatment by permitting use of fixed glass and opaque wall facing on the same plane with movable sash elements.

ALCOA ARCHITECTURAL STOCKS, a complete 94-page catalog of the standard architectural products of Alcoa Aluminum, is now available from your local distributor. It gives the complete details on the complete range of Alcoa Aluminum products suited for a wide variety of architectural applications which he carries in his stocks for immediate delivery. Call your local Alcoa distributor for your copy today. You'll find his number listed under "Aluminum" in your classified directory. ALUMINUM COMPANY OF AMERICA, 1890-K Alcoa Building, Pittsburgh 19, Pennsylvania.

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Heavy Duty Cylindrical Type Locks and Latches
in Cast or Wrought Brass, Bronze and Aluminum

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Design with Enfield Rose No. 3953

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RUSSWIN®
DISTINCTIVE HARDWARE

RUSSELL & ERWIN DIVISION, The American Hardware Corporation, New Britain, Conn.

reviews

(Continued from page 208)

of phenomena, Mondrian in the artistic means, the Surrealists in the unconscious. It may be that looking back to 1955 the critics of 1985 will detect a similar hopeful sure-mindedness. Whether we will appear as free is a far mooter question.

MARTIN JAMES

factor of success

Design for Modern Merchandising. Architectural Record *Editorial Staff.* Architectural Record, *F. W. Dodge Corp., 119 W. 40 St., New York 18, N. Y. 1954. 247 pp., illus. $8.95*

More people than ever before are engaged in wholesale and retail trade which, in turn, means increased and stiffer competition. In the endeavor to get more business by planning expansion or alteration of an out-moded establishment, the merchant of today is confronted with serious problems, first of which is the cycle of high rents and taxes and high building costs in both material and labor. Another question facing him is whether the expense of good design—that is, engaging a talented architect or designer—will pay off in increased trade. In view of the all-time record figures in retail sales and the current unprecedented volume and planning of new building for merchandising purposes, the subject of this book is especially pertinent. The aim is to show that good design is important—even a necessary factor—in raising sales potential, and that the expense of appealing and effective design to display one's wares is well justified in marketing those wares to advantage.

The material in the book is the result of six years' research and all the examples have been publishd in the *Architectural Record.* However, as presented in this volume, they constitute, an informative and timely survey of stores, shopping centers and showrooms. A wide variety of establishments is included—from small retail shops for an optometrist, a watchmaker, a pharmacist, a music shop to medium-sized ladies' and

men's specialty shops, luxury shops, wholesale-display rooms right up to entire department stores and the large shopping centers developing so rapidly on the fringes of our urban centers. The coverage is nationwide and eclectic as to style, ranging from the new Lord & Taylor establishment in Westchester County, New York, to Bullock's Palm Springs store in California. Accompanying the explanatory text are more than 600 photographs, plans, and diagrams to illustrate in an interesting manner how good design can mean more successful selling.

Aside from being of value as a guide and source for designers and architects who are undertaking new construction or alterations, this book has decided interest for owners, investors, store managers and any others who are concerned with the selling of merchandise of any kind.

FRANK A. WRENSCH

review from England

The New Small House. *F. R. S. Yorke and Penelope Whiting. The Architectural Press, London S.W. 1, England. Published in United States by British Book Centre Inc., 112 E. 55 St., New York 22, N. Y., 1954. 144 pp., illus., $5.50*

For the first time since 1939, residential construction restrictions in England are being eased; however, as yet a building license will not be granted for an area of more than 1500 square feet. In the light of such restrictions, this review of small house planning and design will be interesting to English readers; and because of the special, regional nature of most of the work illustrated, its appeal will be almost exclusively to English readers.

Of the 65 examples pictured, six are American houses, six are on the Continent. One example of trailer planning and two of conversion of river barges are included. Details of construction, materials, equipment, finishes are described; the cost is given in many cases. The illustrations are well reproduced. The text is brief and concise.

LAWRENCE E. MAWN

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Supplementing basic Stilemaker designs, are these attractive escutcheons . . .

Brunswick design

Escutcheons in cast brass or bronze . . . 5" and 8" diameters

Mono design

Escutcheons in cast brass, bronze or aluminum . . . 5" and 8" diameters

Cosmic design

Escutcheons in wrought brass, bronze or aluminum, 5½" diameter

STOCK FINISHES: Polished Brass, Dull Brass, Polished Chromium, Dull Chromium, and Dull Aluminum.

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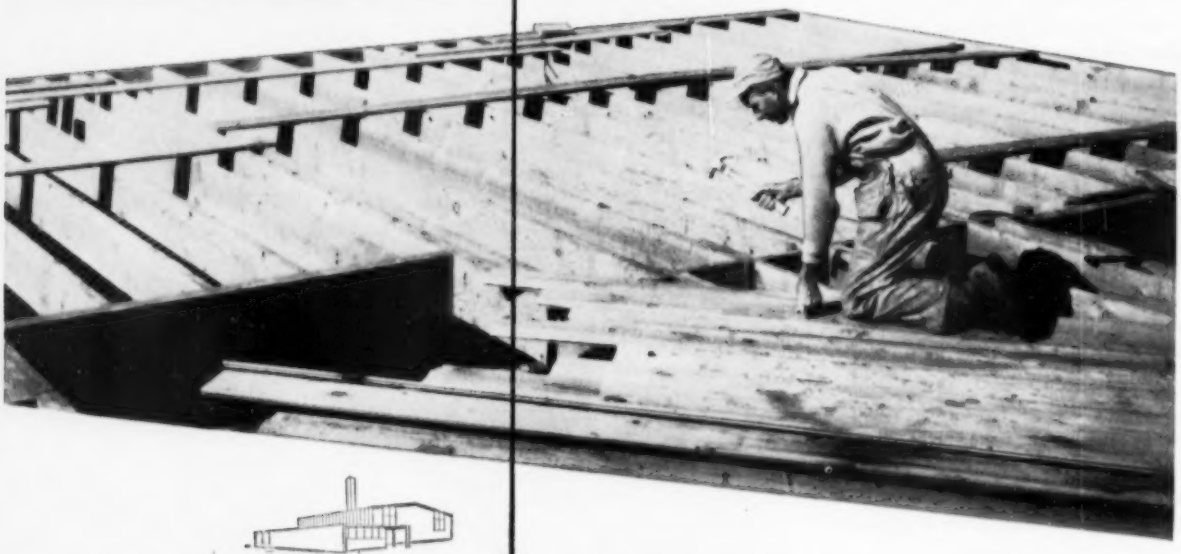
Send for folder describing free literature available for your reference files. West Coast Lumbermen's Assn., 1410 S. W. Morrison St., Portland 5, Ore.



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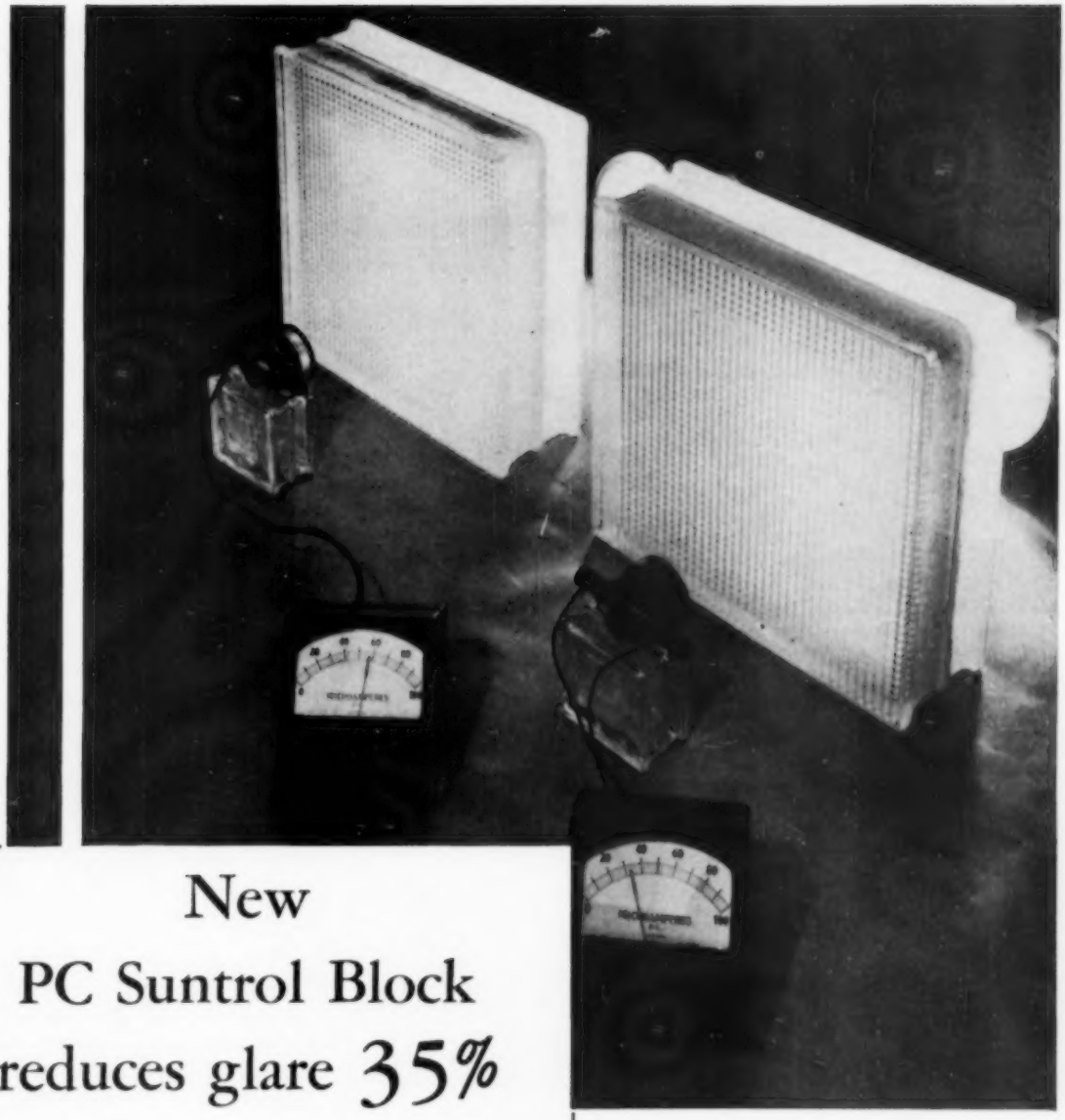

New PC Suntrol Block reduces glare 35%

THE big picture tells the story. A standard PC Functional Glass Block is at the left. But at the right, you see the new PC Suntrol Block that contains a pale green fibrous glass diffusing screen to reduce glare and heat in unusual daylighting locations.

The photocell in front of the conventional glass block reads 57, but for the Suntrol Block it reads only 33. If you have to erect a building with an exposure in the dazzling, unshaded sun, or near a highly reflective parking surface, or even where the bright winter snows create a bad reflection, PC Suntrol Blocks will give wonderful daylighting, *without excessive panel brightness.*

The new PC Suntrol Blocks have also set a record for low instantaneous heat gain. It has been reduced by roughly 25%. The pale green screen creates an additional psychological comfort factor too, but the color has been carefully chosen so it will not alter the apparent color of furnishings. This new block also has twice the impact strength of previous blocks.

PC Suntrol Blocks are available in light directing patterns (for use above eye level), as well as light diffusing and toplighting patterns. Write for the Suntrol catalog. Address Pittsburgh Corning Corporation, Dept. AC-104, One Gateway Center, Pittsburgh 22, Pennsylvania.

PC Suntrol* Glass Blocks

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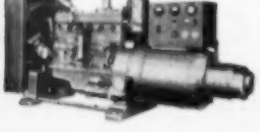

Model 50KA —50,000 watts A.C.

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notices

meetings

THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION'S 32nd annual convention will be held October 25-28 at the Greenbrier, White Sulphur Springs, W. Va.

THE AMERICAN CONCRETE INSTITUTE'S Seventh Regional Meeting is scheduled for October 28-29 at the Statler Hotel, Los Angeles, Calif.

Chicago awards, mentions

Announcement of the young (average age, 32 years) winners of Awards and Mentions in the "Chicago Unlimited" competition sponsored by Carson Pirie Scott & Co. was made last month prior to opening at the Art Institute of a display of the 19 top presentations, chosen from 106 entries by a Jury composed of ROBERT E. ALEXANDER, Architect, Los Angeles; GEORGE W. BARTON, Traffic & Transportation Consultant, Barrington, Ill.; MILES L. COLEAN, Economist and FAIA, Washington, D. C.; Chancellor HENRY T. HEALD, New York University; and LADISLAS SEGOE, City Planner & Engineer, Cincinnati. HOWARD L. CHENEY, FAIA, Evanston, Ill., was Professional Advisor.

The Jury observed that "the first three Awards should be considered as a unity" offering (*First*) a well-defined plan and organization for redevelopment of Chicago's Commercial District over the next 100 years; (*Second*) strong proposals for intermediate steps; and (*Third*) a serious professional study of existing conditions—and the potentials.

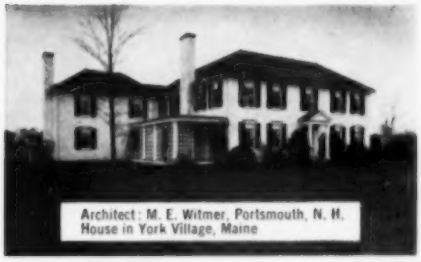
First Award ($20,000) went to a team of Pratt Institute seniors and their design critic for their graduation thesis/competition presentation, setting "an ultimate goal for Chicago 100 years from now." They are: HERBERT A. TESSLER, 23, Team Leader; LEON MOED, 23; JOSEPH A. D'AMELIO, 22, now a Fulbright Scholar in Italy; WILLIAM H. LISKAMM, 22, now a Fulbright Scholar in Germany; and Associate Professor WILLIAM N. BREGER, 33.

Second Award ($7500) went to a team of Philadelphia architects and planners, They are: WILHELM VIGGO VON MOLTKE, 43, Team Leader, Chief of Land Planning

(Continued on page 222)

specify...Cabot's

today's
most wanted colors



Architect: M. E. Witmer, Portsmouth, N. H.
House in York Village, Maine

...traditional or modern

Architect: Joseph Allen Stein, San Francisco
House in Mill Valley, California

Cabot's
GLOSS COLLOPAKES®
House and Trim Paints

Only Cabot offers modern colors for modern living plus these exclusive advantages due to the patented Collopaking Process

- **non-fading**
- **porcelain-smooth finish without brushmarks**
- **tremendous hiding power**
- **lasting, bright gloss**
- **tough, flexible, long-wearing film**

Unlike ordinary paints the oil and pigment in Cabot Collopakes stay together on the surface and penetrate together to bind the film firmly to the wood.

Request color card showing 32 attractive shades, including Haddam Barn Red, Harwichport Blue, October Brown and Moravian Gray.

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LEADING architects are studying the findings of Dur-O-waL's independent research tests. Now you can specify steel reinforcing for every masonry wall, on the basis of these scientific findings. Trussed-designed, butt-welded Dur-O-waL reinforces vertically and horizontally to combat cracks . . . safeguard masonry beauty.

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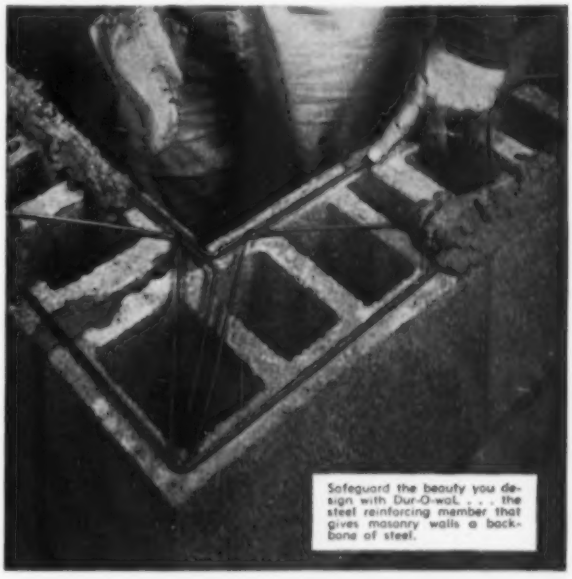
Patented Dur-O-waL features a trussed design. This steel reinforcing for block, brick and tile walls assures uniform quality of product and scientifically tested performance. Get the Dur-O-waL facts today. Learn how you can save time, cut costs and combat cracks with Dur-O-waL.

Dur-O-waL is electrically-welded in a single plane of high tensile steel (100,000 p.s.i.); knurled side rods increase mortar bond. Your inquiry will receive prompt attention.



Safeguard the beauty you design with Dur-O-waL . . . the steel reinforcing member that gives masonry walls a backbone of steel.

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- **Dur-O-waL Div., Dept. 1-A**
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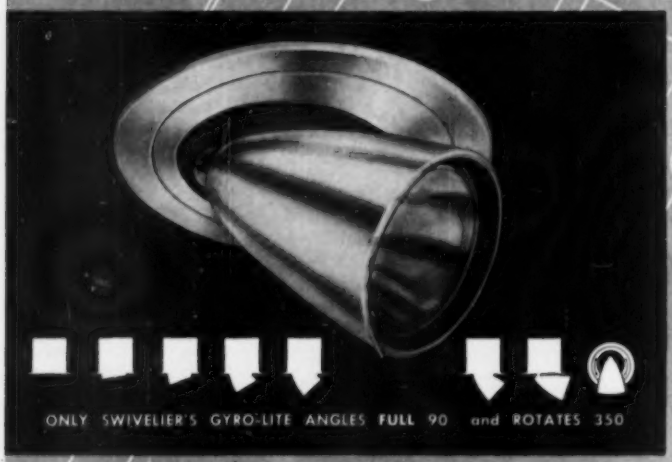

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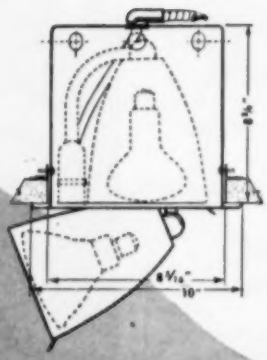
Design for *Spot* LIGHTING

Universally adjustable "Gyro-Lite" has been designed and engineered to provide maximum lighting flexibility. It spots the light *where* you want it, *when* you want it.

"Gyro-Lite" is made with the patented Swivelier Spring Tension Socket which *easily* adjusts to any position and "stays put...at any angle!" (U. S. Air Force tests show "no decrease in tension after 10,000 adjustments").

"Gyro-Lite" accommodates 75-Watt PAR-38, 150-Watt PAR-38 and 75-Watt R30 lamps. Special "Gyro-Lite" louver and sectional color lenses are available.



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Offers three intensities of illumination: 300-watt PAR-56 Spot, 300-watt PAR-56 Flood, 200-watt PAR-46 Spot.

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SIMPLE TO INSTALL! Installation same as "rigid" recessed fixtures

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PLANT: BUSH TERMINAL BUILDINGS, BROOKLYN 32, N. Y.

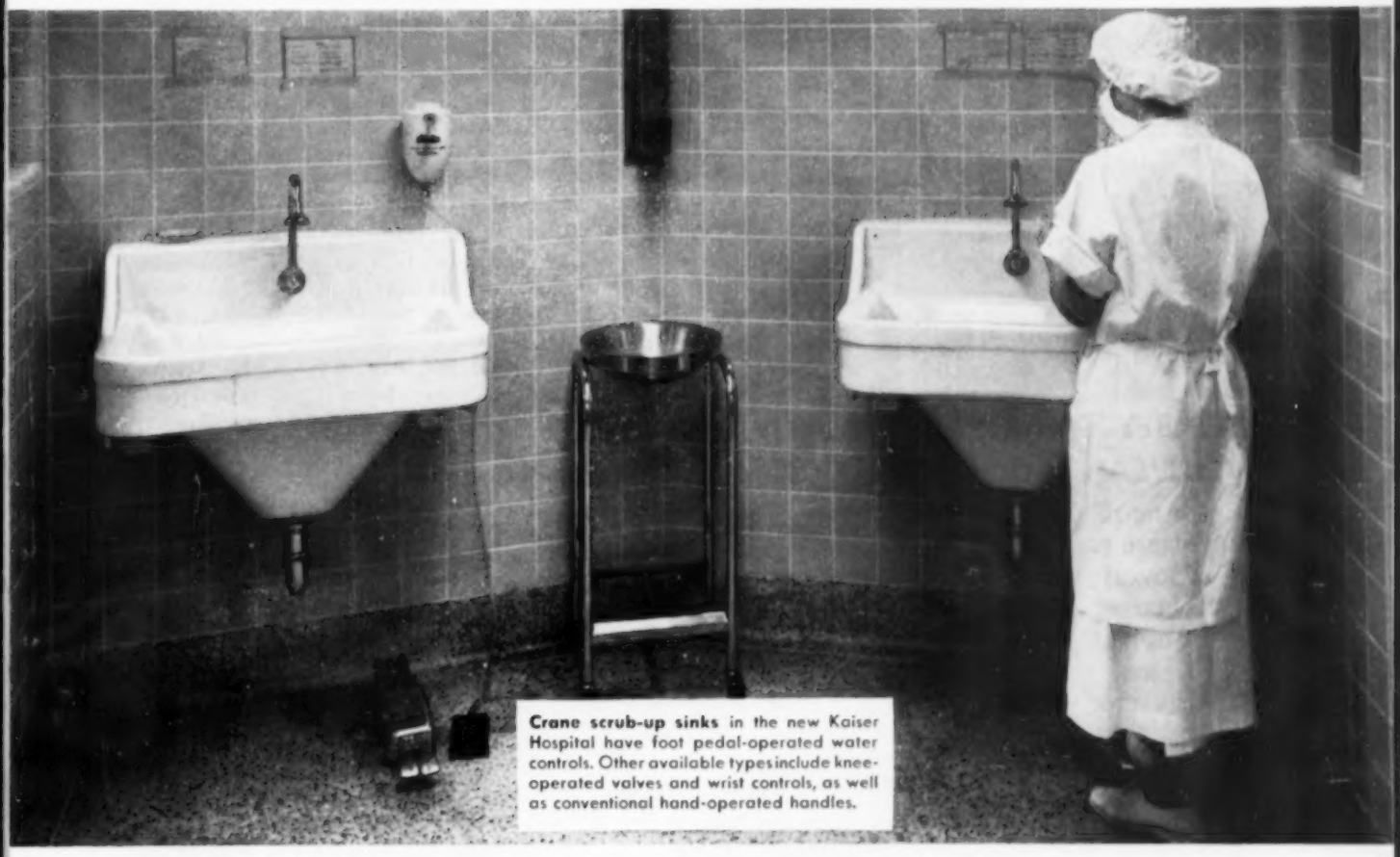
*REG. U.S. PAT. OFF.

How CRANE specialized plumbing helps modern hospital planning

Modern hospital equipment of all kinds is designed either to increase the effectiveness of hospital staffs or add to the comfort of patients, or both.

Crane specialized plumbing fixtures are an outstanding example of this. In size, shape and materials, Crane hospital fixtures are carefully designed for specific hospital uses. In fact, Crane offers the most complete line of such equipment available.

One of a growing number of modern, Crane-equipped hospitals is the impressive new Kaiser Foundation Medical Center.



Crane scrub-up sinks in the new Kaiser Hospital have foot pedal-operated water controls. Other available types include knee-operated valves and wrist controls, as well as conventional hand-operated handles.

New Kaiser Foundation Medical Center in Los Angeles takes advantage of the warm climate with outdoor balconies that serve as corridors for visitors, while indoor corridors are for sole use of hospital staff.

Other features with more general practicability for any climate include many individual nurse's stations (instead of a few large ones) on each floor . . . and specialized hospital plumbing fixtures by Crane.

As in domestic plumbing, Crane hospital equipment is not only superior in itself . . . but enjoys a superior reputation as well.

That's why, in either hospital or domestic architecture, your clients are pleased when you specify Crane.

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SEE BETTER—FEEL BETTER—WITH VANCO VENTILATED DOME-AIRS..

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Dome-Air combines power-controlled ventilation with the standard VANCO DOMELITE, factory assembled, and mounted on insulated metal curbing. Dome-Airs are packed and shipped as complete units — ready to install over roof opening. Dome-Air's insulated curbings are provided with Roofer's Flashing Flanges. 8" power fans come in standard units, but 10" or 12" are available at slight extra cost — if specified. More than one power fan can be installed in a single unit. Dampers open and close automatically with operation of switch (110 Volt A.C.). Dome-Airs are available in aluminum or copper, in standard or special sizes to fit requirements. All have genuine PLEXIGLAS® domes, either clear or white translucent, as preferred.

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DON'T GUESS AT QUALITY . . . YOU KNOW—WHEN IT'S VANCO!

notices

(Continued from page 218)

Division, Philadelphia City Planning Commission; HANS GEORGE EGLI, 29, Philadelphia Architect; and IRVING WASSERMAN, 28, Landscape Architect, DAVID HODGES KARP, 22, Architect, ROBERT F. KITCHEN, 25, Planning Designer, and CLIFFORD B. SLAVIN, 27, Architect and Planning Designer, all of the City Planning Commission.

Third Award ($2500) went to a Chicago team composed of members of Pace Associates and two others. They are: JOHN F. KAUSAL, 44, Team Leader, Architect; CHARLES B. GENTHER, 47, Architect; WILLIAM T. PRIESTLEY, 47, Architect; ALBERT A. GOERS, 45, Architect & Engineer; MACE DE BUY WENNIGER, 30, Planner; JOHN T. BLACK, 37, Architect; W. H. BINFORD, W. B. COBB, K. D. FARWELL; and also GRAHAM ALDIS, 58, Real Estate expert; and ROBERT S. CUSHMAN, 50, Attorney.

Five *Fourth Awards* ($500 each) went to the following teams: LEWIS CLARKE, Assistant Professor, ROGER MONTGOMERY and BEN GARY, JR., Students, all of North Carolina State College, Raleigh, N.C.; CARL L. MASTON, Architect, and BEDA ZWICKER, Designer, Los Angeles; MARVIN E. GOODY, Instructor, Assistant Professors KEVIN LYNCH and RALPH RAPSON, RAI Y. OKAMOTO, Instructor, and Associate Professor BURNHAM KELLY, all of MIT Department of Architecture; Professors C. H. JORDAN, R. W. HECK, T. G. HANSEN, and E. KEITH MCPHEETERS, all of Auburn Polytechnic Institute Department of Architecture; and a Detroit team composed of EDWARD J. HUSTOLES, RUTH V. WILSON, CARL ALMBLAD, GEORGE VILICAN, JR., MAURICE D. CHANCLER, and ARTHUR M. SHATZ, all of Detroit City Plan Commission; and also RICHARD H. JENNINGS.

The Jury granted *Honorable Mention* to CHARLES ALEXANDER BLESSING, Director, Detroit City Plan Commission; to KENNETH H. DILLON, Hollywood Designer, with BLAINE N. RAWDON, North Hollywood Designer & Draftsman, and HARRY SALM, Netherlands Designer; to WITOLD K. VON HENNEBERG, Architect & Planner, and JACEK VON HENNEBERG, Harvard Instructor, with JAMES A. S.

(Continued on page 226)

SINGLE OR DUAL GLASS

interchanges anytime in Miller's aluminum sliding glass doors

An interchangeable glazing mold permits these new aluminum frames to accommodate either single or dual glass! They even convert later without disturbing framing installation.

This exclusive feature (and others such as the channel-type mohair pile weatherstrip) offers many benefits.

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aluminum frames use either mold

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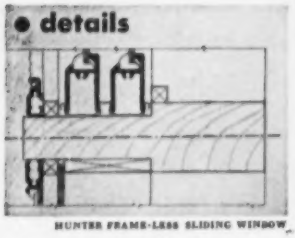

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(Continued from page 222)

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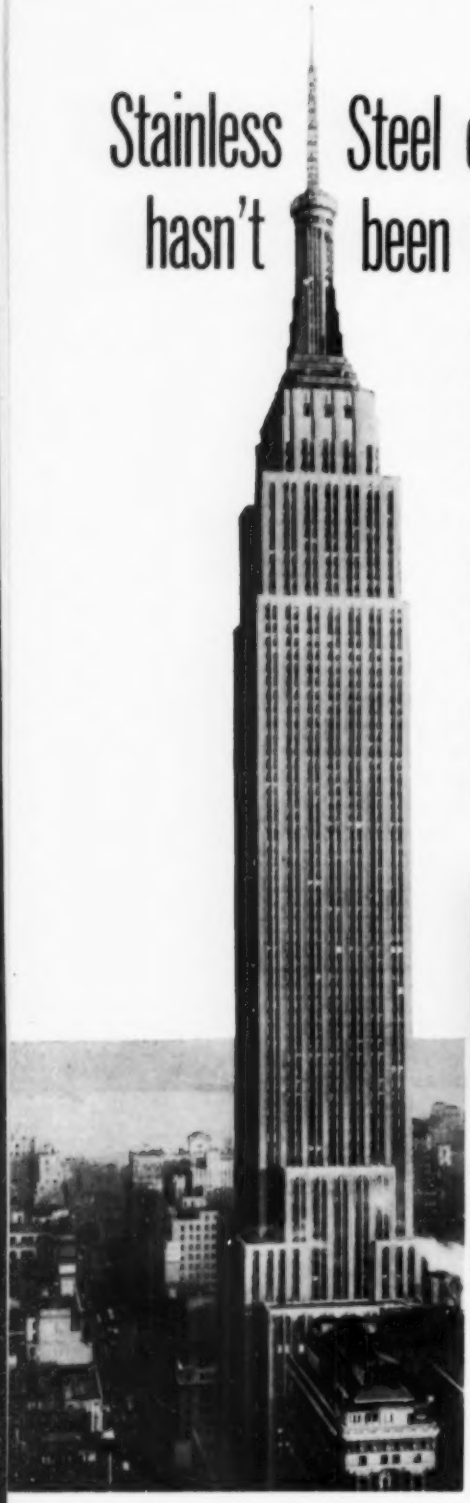
Stainless Steel on the Empire State Building hasn't been touched since the building was erected



THE use of Stainless Steel as a material that is both decorative and functional has no better example than the majestic Empire State Building which towers 1,472 feet into the New York skyline.

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TOP—Parallel strips of Stainless Steel, 18 inches wide are installed along each side of the windows, adding sparkling beauty to the tall building.

LEFT—The Empire State Building is the world's tallest building, towering 1,472 feet and having 102 floors. Architects were Shreve, Lamb and Harmon, New York. Contractor was Starrett Brothers and Eken, New York.

RIGHT—Stainless Steel is used extensively in the tower of the Empire State Building, now surmounted by a 222-foot television transmitting tower.

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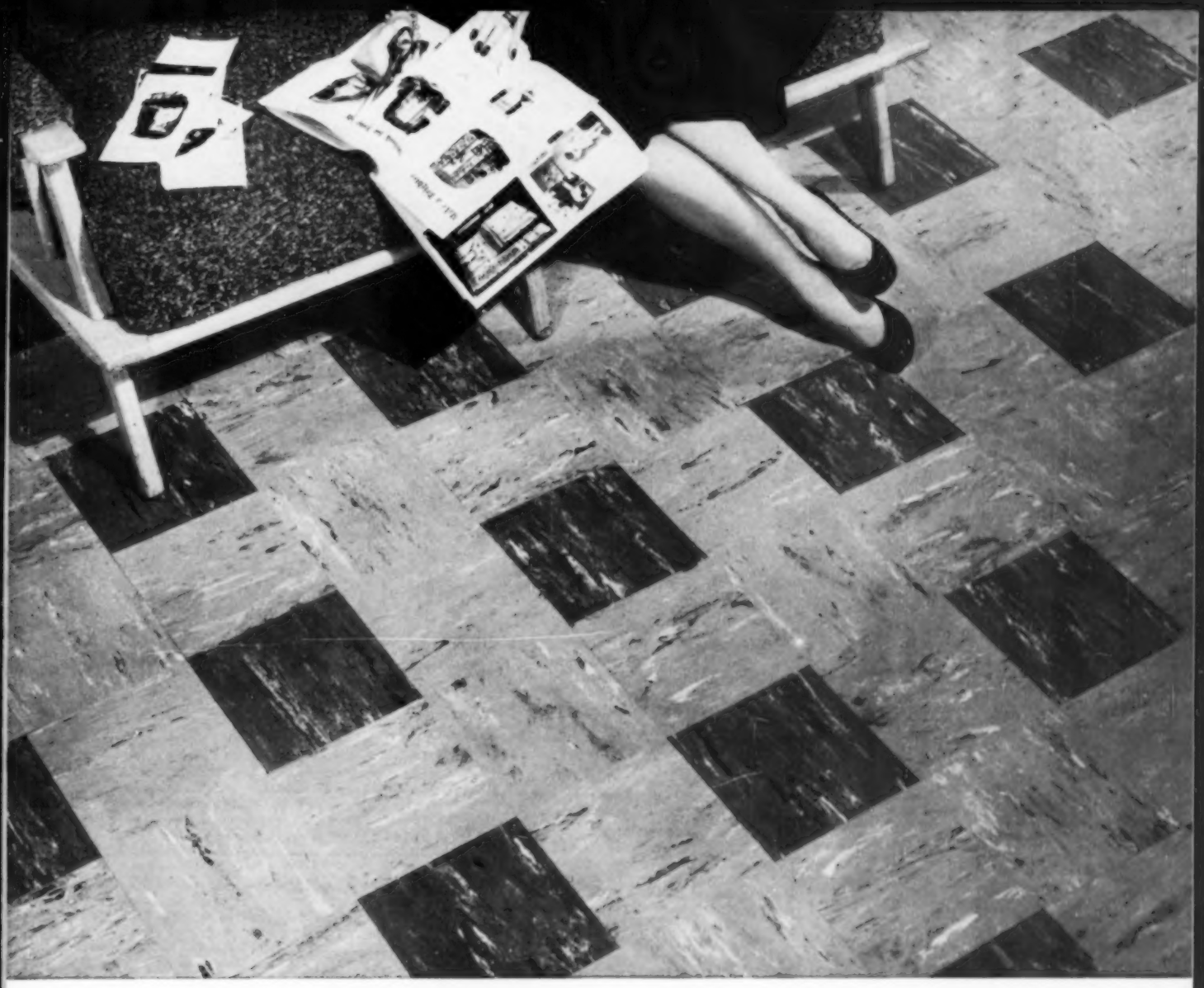

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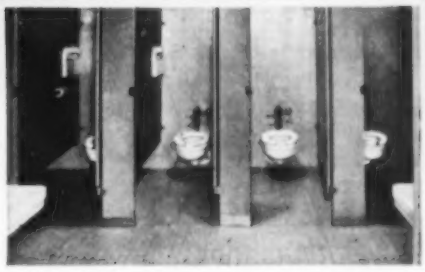
SHOWN AT LEFT is American-Standard Lucerne vitreous china lavatory with the Zurn System fitting for this particular wall-type fixture.



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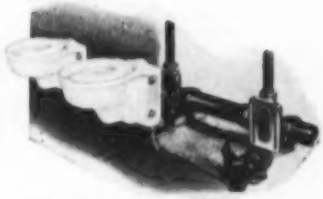
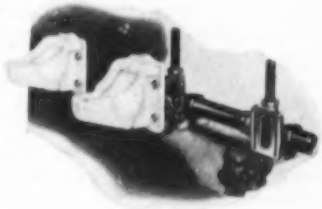
Pittsburgh, Pennsylvania

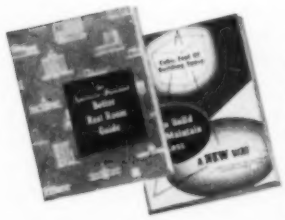
J. A. Zurn Mfg. Co.,
Plumbing Division, Erie, Pa.



ABOVE: American-Standard Glenco toilets installed with Zurn Systems relieve the wall of all the load.

BELOW: Wall-type model of the famous Sanistand fixture—the American-Standard urinal for women. It is installed with a Zurn System fitting especially designed for this fixture.





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Ceiling in this room is of specially designed panels of water-white crystal by Corning. Louvers of Alba-Lite shield directional lighting used to highlight centers of attention.

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Above: Magnalite Type "A" as used at Sidney Hillman Medical Center, Philadelphia. Louis and Henry J. Magaziner, Archts.

Left: Magnalite Diffusing Glass Type "B" Wired in Ceiling Lights, Fox Point Elementary School, Providence, R. I. Cull and Robinson, Archts.

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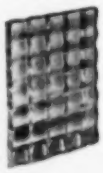

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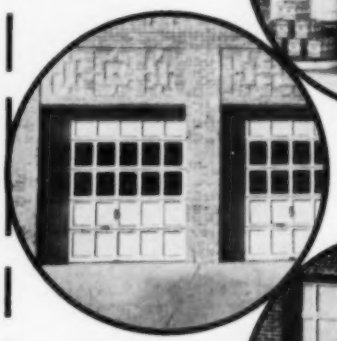
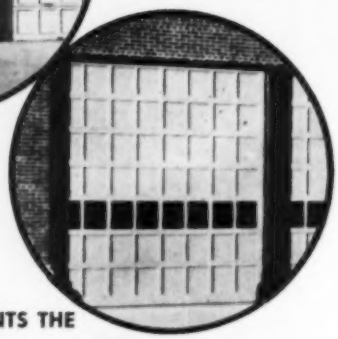
RAYNOR DOORS

RAYNOR DOORS



RAYNOR DOORS



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Top Door Quality

YOU DESIRE AND THEY DESERVE

Whether you are specifying a Raynor door for a truck terminal, service station, warehouse or home, the completeness of the Raynor line of wood sectional overhead doors, is your assurance that the door is designed and built to fit the opening.

The smooth operation and complete weather protection accomplished by Raynor exclusive Graduated Seal is further assurance to you and your client of lasting door satisfaction.

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SEE OUR CATALOG IN SWEETS

RAYNOR MANUFACTURING COMPANY, DIXON, ILL.

Builders of a Complete Line of Wood Sectional Overhead Doors

BEST FOR INDOOR HIGHWAYS

The floor covering of this huge Super Market—a recently completed unit of a Nationally known chain—is HAKO Vinylflex all-purpose tile.

In today's modern shopping centers with daily 9 to 9 customer traffic, a flooring that has super toughness is required. A durable strength that can take day-in, day-out wear and still retain its cheerful beauty. Such a flooring is HAKO Vinylflex Plastic Floor Tile, manufactured for use in interiors that are veritable Indoor Highways and need floor coverings which are grease-proof . . . resistant to alkalies, mild acids, fats, oils, naphtha and even gasoline.

Three basic needs for the modern shopping center . . . low initial cost, safety underfoot and ease of maintenance are yours with the choice of HAKO VINYLFLEX PLASTIC FLOOR TILE.

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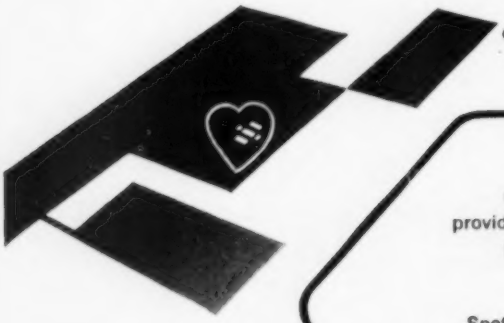
In the heart of Northland

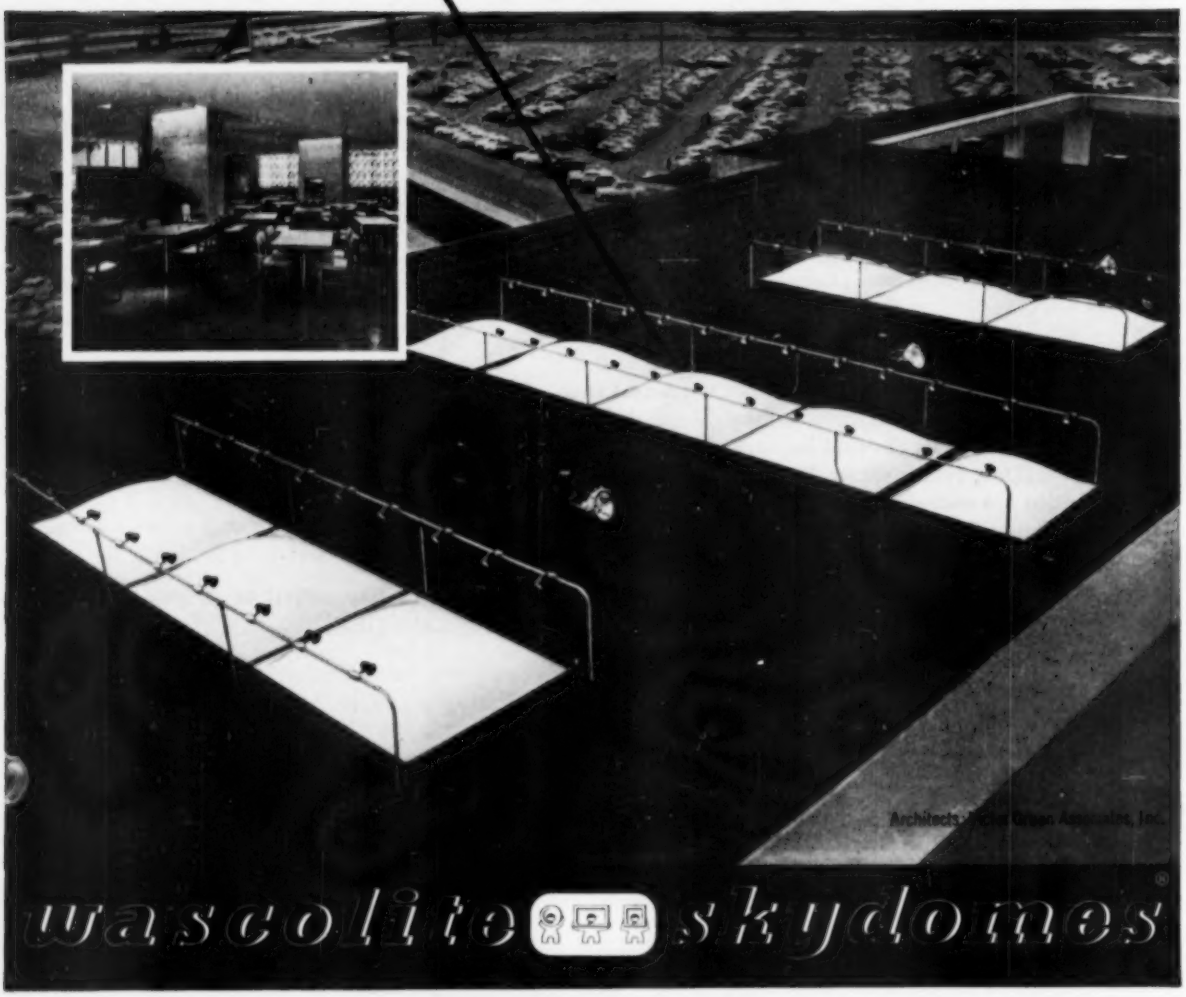
...WASCOLITE SKYDOMES



In this most modern of shopping centers, Wascolite Skydomes express rare creative design and sound architectural values. They provide dramatic effects while admitting softly diffused daylight into busy Northland Room, the J. L. Hudson Company's restaurant in the heart of Northland Center, Detroit, Michigan.

Spotlighted at night, these special-size Wascolite Skydomes are used here in a continuous arrangement — one of the many designs possible with this flexible toplighting medium.

Wascolite Skydomes are available in both White Translucent or Clear Colorless acrylic plastic. They come in 3 basic shapes — square, rectangular, circular — and in a wide range of stock sizes. Free daylight engineering service is available to architects.



See Sweet's Catalog or write ..... **WASCO FLASHING COMPANY,** 90 Fawcett Street, Cambridge 38, Mass.

You can't beat
light from the sky!

- This is the Azalea Road Elementary School in Mobile, Alabama.
- Architects: Ellis & Winter, Mobile.

THE picture shows a recent installation of PC Skytrol Blocks. Notice how *much* light there is — without harshness. Skytrol Blocks contain a fibrous glass diffusing screen that softens the light and makes it easy on the eyes.

That screen does something else, too. It divides the block into two cavities resulting in an impressive insulation value of U = 0.44. This eliminates many of the age-old problems of skylights: there is little or no condensation, no cold zone under the panel, no increase in heating costs.

PC Skytrol Blocks are cast into a rigid, steel-reinforced concrete grid that won't warp or rust. There is nothing to putty or calk. It's a thoroughly proved method of toplighting —used in Europe for many years.

Best of all is the cost. The *installed* cost of Skytrol panels is running about $4.50 to $6.50 a square foot, depending on the job. For more information consult Sweet's or write to Pittsburgh Corning Corporation, Dept. AC-104, One Gateway Center, Pittsburgh 22, Pennsylvania.

New. Skytrol Blocks are now available with the new Suntrol pale green diffusing screen to reduce heat and glare in difficult locations.

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GLASS BLOCKS

ALSO PC GLASS BLOCKS AND FOAMGLAS®

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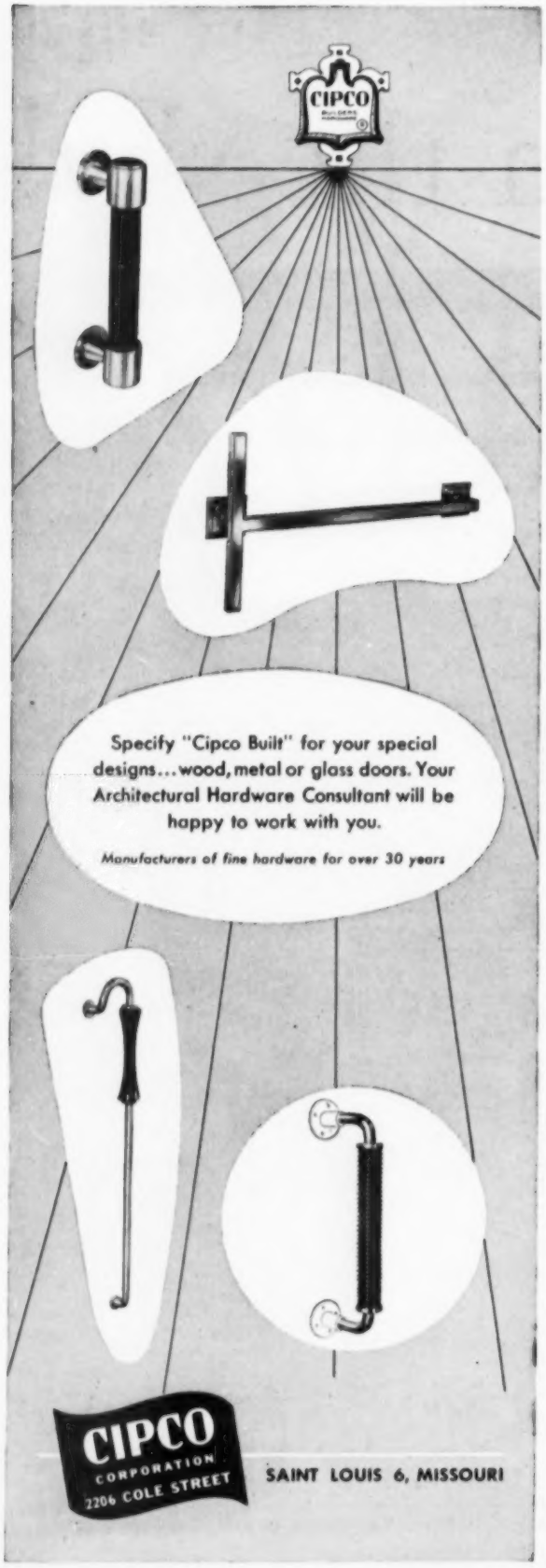
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After 3 years of comparison testing, a water repellent treatment based on Dow Corning silicones was considered the one offering the most hope of preventing gradual weather-erosion of the marble exterior of the Chicago Natural History (formerly Field) Museum.

WATER REPELLENT LOK-SEAL, BY CROWN COATINGS CO.

or

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Detroit Caulking & Weatherproofing Co.
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To preserve the clean, upswept beauty of the distinctive Ford Rotunda, the entire limestone exterior was thoroughly cleaned and treated with a silicone-based water repellent in December, 1953.

WATER REPELLENT TRUSCON'S SUPER-POR-SEAL WITH SILICONE

A water repellent treatment made with *Dow Corning Silicones* preserves the beauty, cuts maintenance costs

When it comes to retaining original appearances, more and more contractors and architects agree: masonry water repellents made with Dow Corning silicones extend the effective life of an above-grade "face lifting" job from months to years. Completely invisible and nonplugging, silicone treatment does not change surface color or "breathing" characteristics in any way. Yet dirt washes off, not into, treated masonry. Staining, streaking, spalling and efflorescence are reduced to the vanishing point. Maintenance and upkeep costs are minimized or eliminated entirely. Treatment costs surprisingly little; remains effective for years.

Dow Corning silicone-based water repellents are now available from formulators and their distributors in every part of the country. Write Dept. EC-22 for more information and a list of suppliers. Dow Corning Corporation, Midland, Michigan.

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Corridor, Utica Free Academy,
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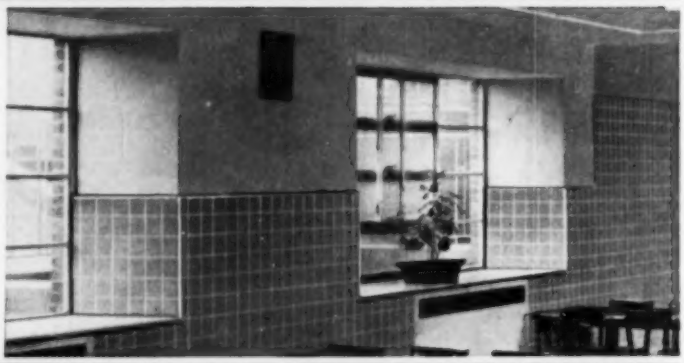

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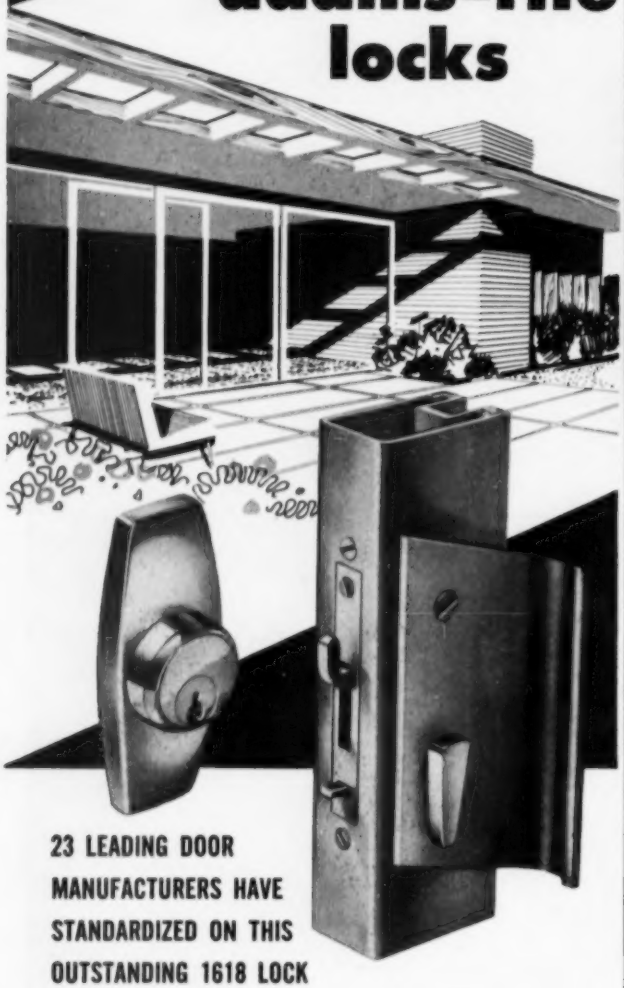

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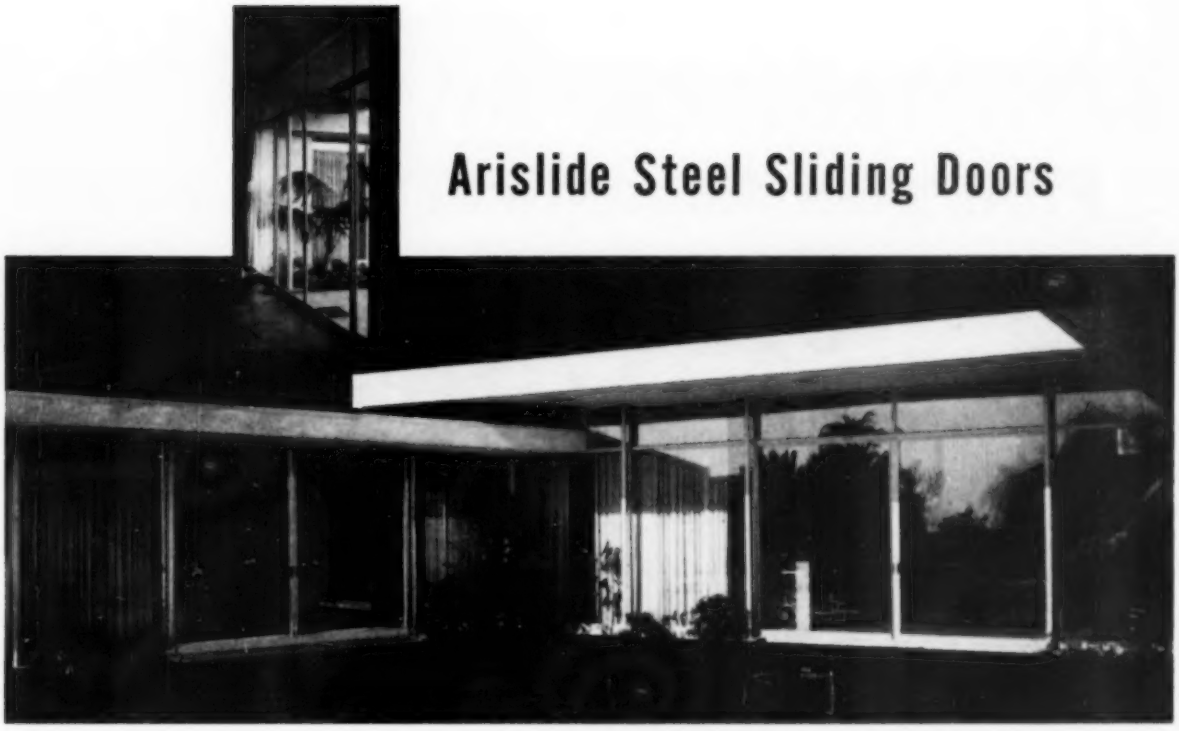

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Roller bearing rollers for smooth operation.

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- 5′ to 24′ widths, 6′10″ height. Special types and sizes furnished to meet individual requirements.

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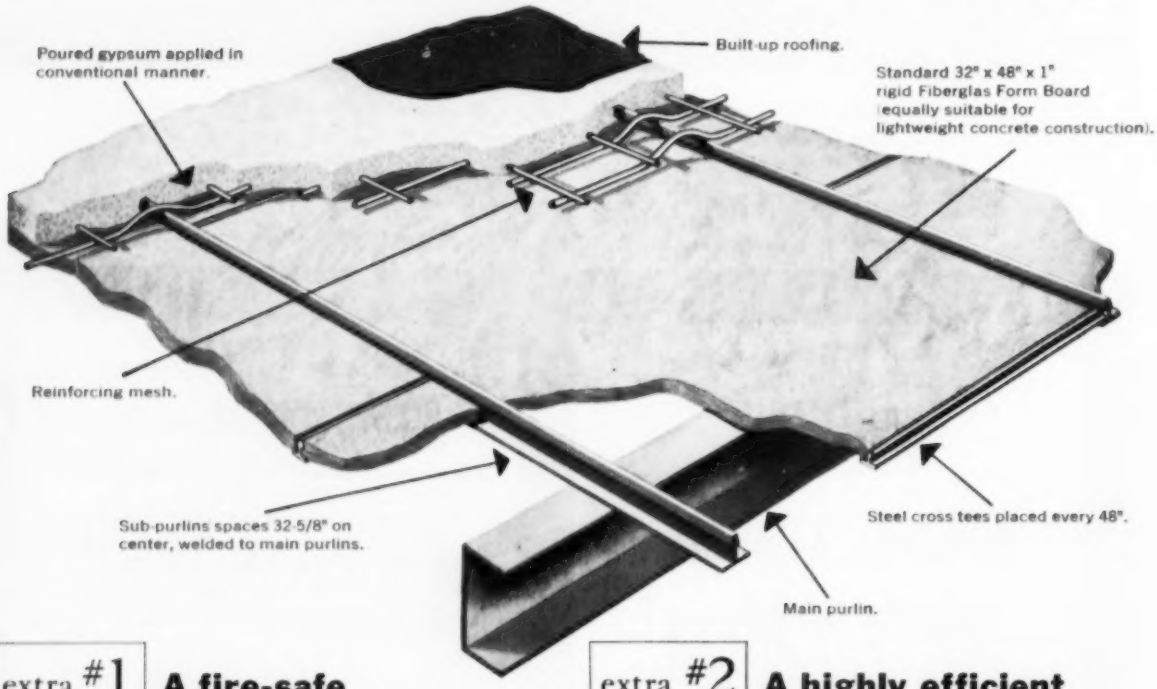
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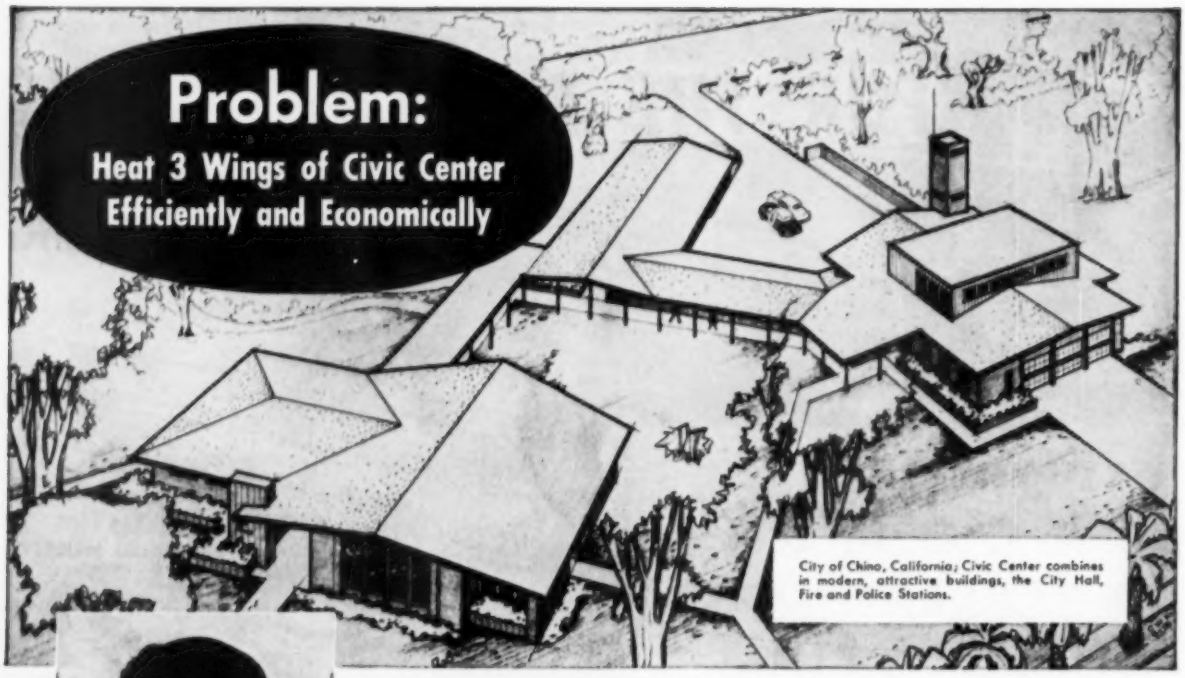
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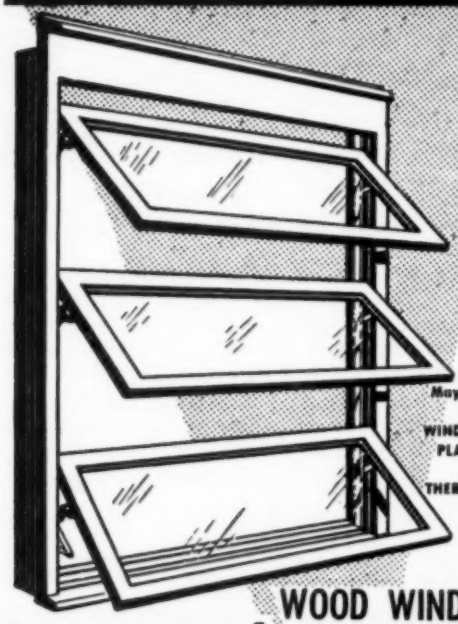

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Inside view, during construction, showing how ramp accommodates customers to floor-level stall.

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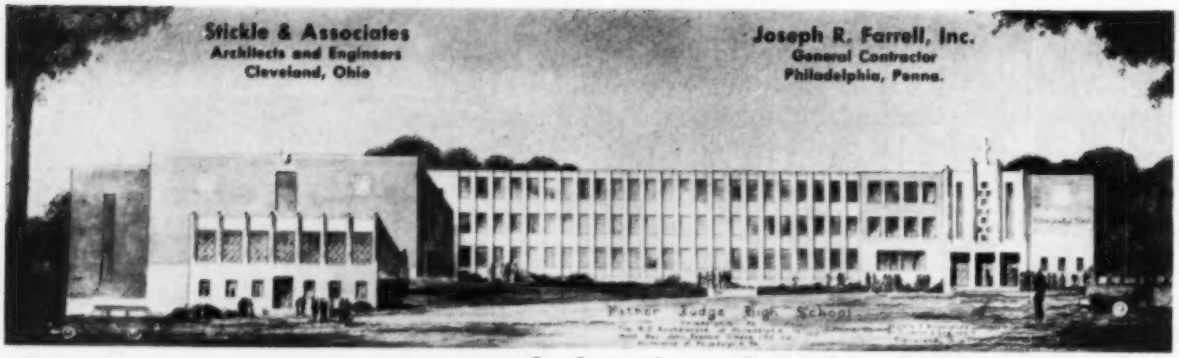

hydroment was specified and used in the classrooms, corridors and service areas of this new school.

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Contractor praises workability of concrete made with Duraplastic*

Contractor for John Moses Veterans Hospital in North Dakota, E. V. McGough, reports: "Duraplastic gave us a very good finish . . . required less water and vibration."

Duraplastic air-entraining portland cement helps make a more plastic mix that aids proper placement in forms.

John Moses Veterans Administration Hospital, Minot, North Dakota; Contractor, McGough Bros., St. Paul, Minn.

Duraplastic provides trim appearance for Pennsylvania school

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Minimized water gain and segregation with Duraplastic help produce an attractive surface—free of honeycomb and streaks. Its air-entraining feature fortifies concrete against freezing-thawing weather.

Contractor, Lundy Construction Company; Architect, D. H. Grootenboer—Williamsport, Pa.; Engineers, A. W. Lookup Co., Philadelphia.

Owner-builder reports lower costs with Duraplastic

W. C. Smith, whose firm is contractor and owner of the Mount Royal Manor Apartments in Duluth, says: "Concrete made with Duraplastic cement has better workability that helps lower costs."

Duraplastic makes concrete that is durable in any climate. When you design for or build with concrete, keep in mind the advantages of Duraplastic.

Mount Royal Manor Apartments, Duluth, Minn.; Contractor-Owner, W. C. Smith, Inc.; Architect, A. Reinhold Melander—Duluth.

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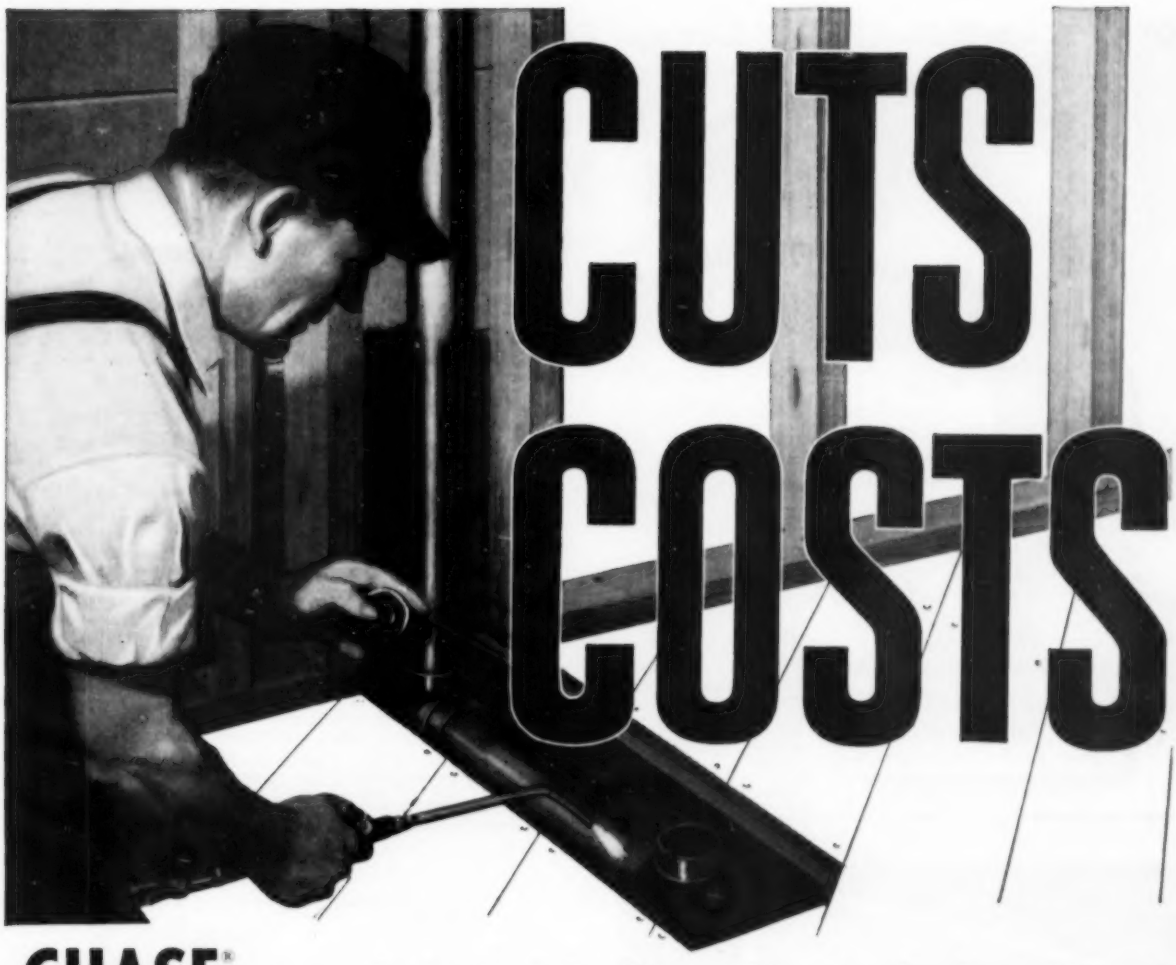

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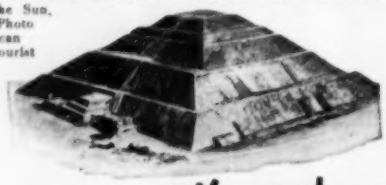

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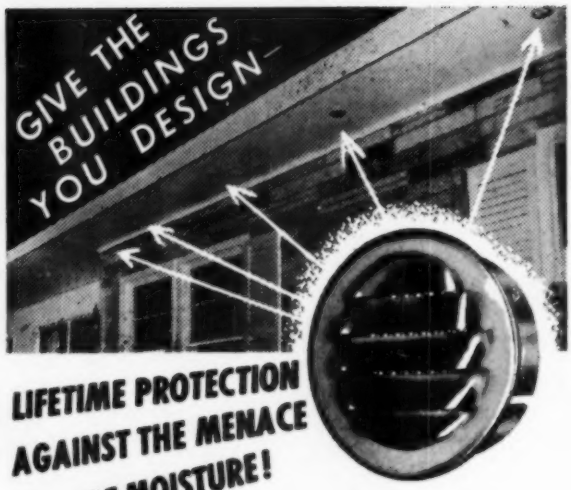

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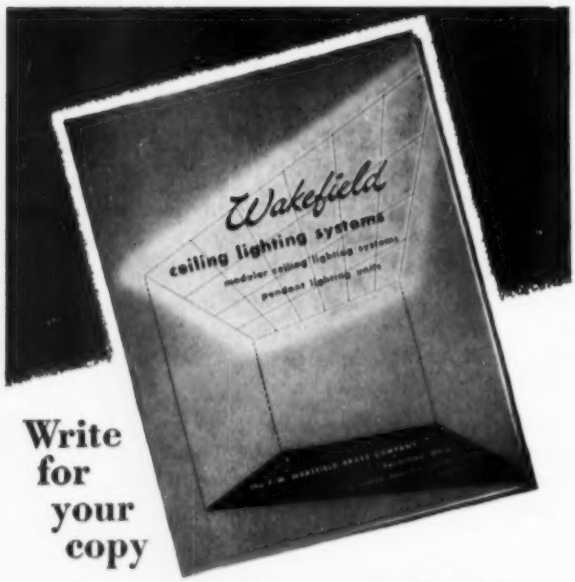

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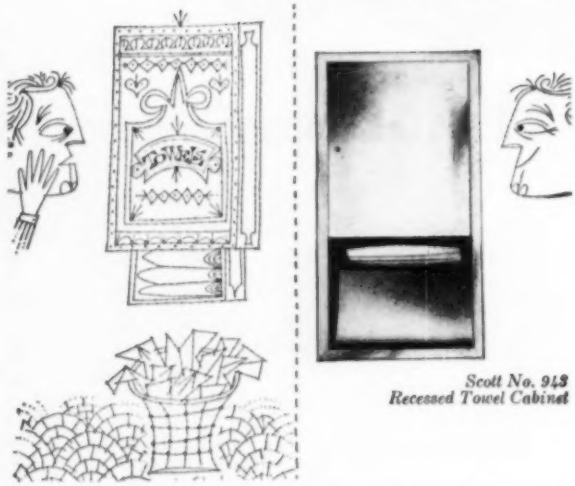

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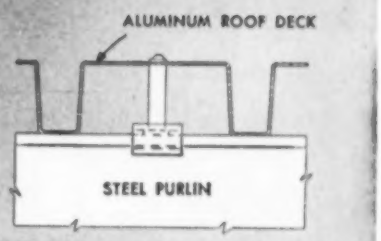

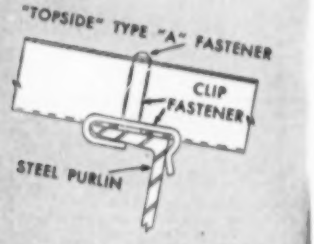

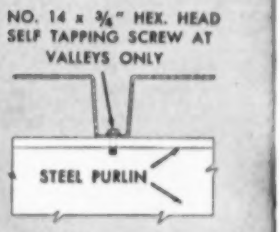

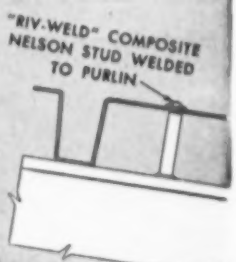

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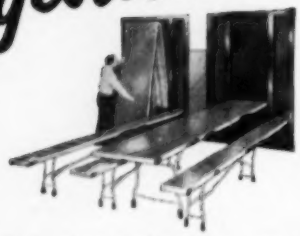

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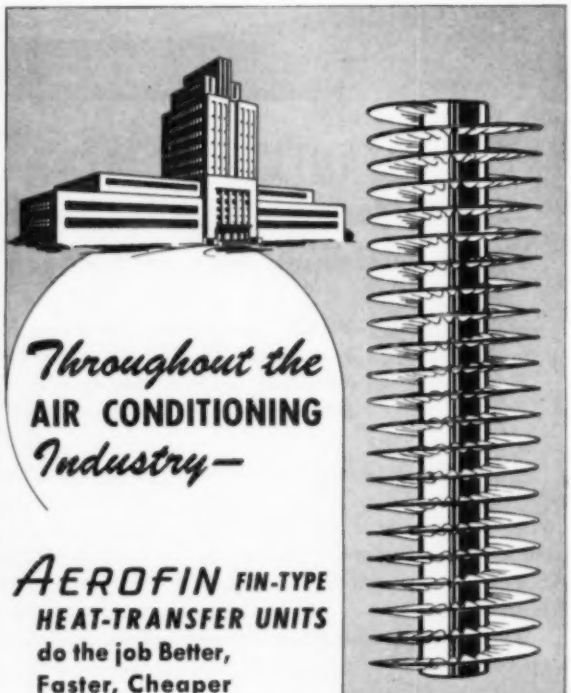

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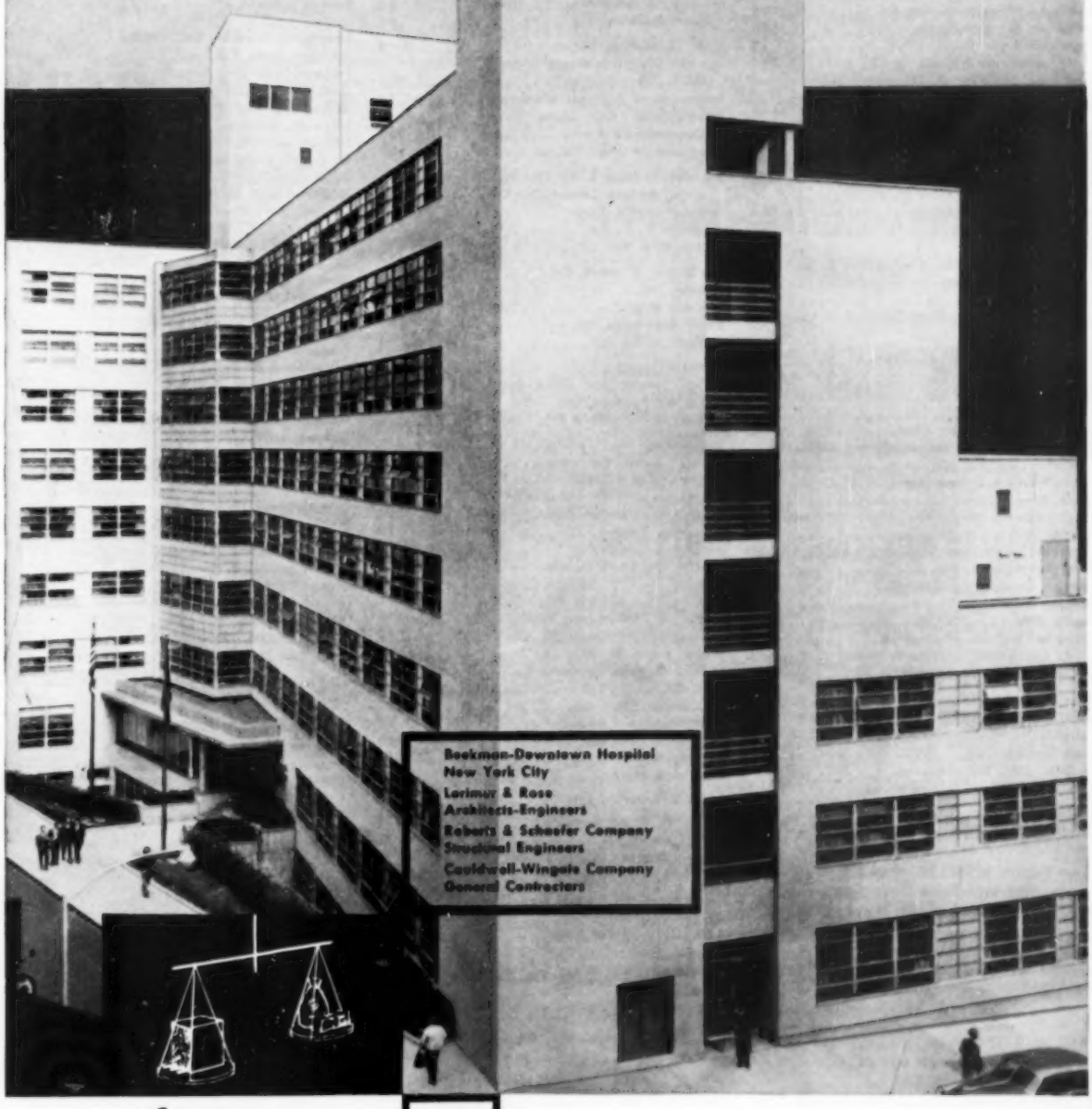

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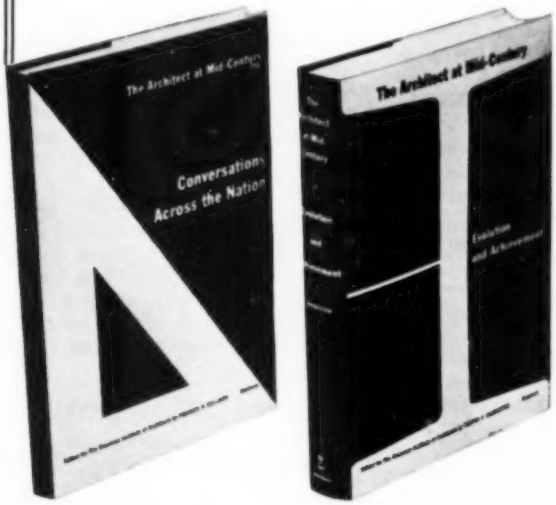

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GOSSIP

Victor Gruen, who is now in Europe recovering from an operation which was more serious than he or the doctor intended, is consoled by a new commission shared with **Oscar Stonorov** and **Minoru Yamasaki.** Job is redevelopment project in downtown Detroit; client is "Mayor's Committee," composed of auto industry bigwigs, chairmanned by **Walter Reuther,** CIO head. Architects say that Detroit business and labor, realizing that the automobile has caused new urban problems, want to show how good planning can help solve them. **Carl Feiss,** P/A columnist, has left HHFA; last several columns have emanated from Maine retreat. **Raphael Soriano** writes that he has found the ideal setting for a pleasant practice—water, rocks, earth, sky—in Tiburon, California. **Thorshov & Cerny,** serving a client with headquarters in New York from their Minneapolis office, found him so hard to please that they sent Design Associate **Newton Griffith** to the big city to make new sketches, until one was approved. P/A Drafting Editor, **Elmer Bennett,** lending space and materials to Griffith, got the earliest possible look at some future SELECTED DETAILS. **Walter Gropius** writes from Japan that architecture there intrigues him, but that he'll be back for P/A Design Awards Jury service. **José Luis Sert** sends post card from Spain, alarmed at news of out-of-context quotes in *House Beautiful.* **Al Aydelott** calls from Memphis on Sunday afternoon to report a hot idea on a hot day—that a good syndicated column on architecture is needed to educate the public in benighted areas. **Bill Deitrick** of Raleigh, North Carolina, telephones on his way through town from Maine vacation to report business good, resting in New England better.

David Henken calls to report difficulty with project of moving to Dobbs Ferry the **Frank Lloyd Wright** house which was part of exhibit seen by many thousands at Guggenheim Museum site last year. Client who bought house and wanted it relocated was turned down by Architectural Board of Review, which decided it would be "excessively dissimilar" to adjacent houses, "thereby impairing the stability of values of said improved properties and preventing the most appropriate development of this area." The decision has been appealed. **Ed Stone,** recently divorced, took off for Lebanon on a hotel project, remarried, went on to India on a State Department job, then decided to continue honeymoon trip around the world.

Speaking of State Department work, Advisory Committee, including architects **Pietro Belluschi, Ralph Walker,** and **Henry Shepley,** has recommended and had approved commissions to a distinguished but not at all obvious group of architects. The committee, after thoughtful analysis of design abilities, interest in wedding local environment to contemporary needs and potentials, and professional responsibility, suggested appointment of the following, all now under contract: **Gardner Dailey,** Staff Quarters in Manila; **Michael Hare,** Embassy in the Honduras; **Chloethiel Smith** and her firm **(Keyes, Smith, Satterlee & Lethbridge),** Embassy at Asuncion, Paraguay; **Moore & Hutchins,** an Office Building in Dakar; **Paul Rudolph,** Embassy in Aman, Jordan; **Ed Stone,** an Embassy job at New Delhi; **Hugh Stubbins,** a Consulate in Tangier; **Bob Weed (Weed, Russell, Johnson),** a Consulate in Leopoldville; **Bill Wurster's** firm **(Wurster, Bernardi & Emmons),** an Office Building in Hong Kong; **Yamasaki, Leinweber & Helmuth,** a Consulate in Kobe, Japan. This represents the program for the 1955 fiscal year—all the funds available at present for building work. The whole program is a pleasant surprise to those who feared that **Lee King's** abrupt departure from the State Department's FBO office implied a reactionary design swing. **Alan Jacobs,** who headed FBO's Paris office so effectively, has gone back to private work and is reported in Africa. **Henry Lawrence** is now Technical Director in the Washington office.

Louis Gohmert reports on the pleasures of practice in a small community —in his case, Mt. Pleasant, Texas, population 6500. Gohmert says that he had always wanted to "settle in a town where I could walk down the street and call people I met by name." In this he was encouraged by **Bill Caudill,** during his school days. He's done it, finds that "low overhead makes it possible to enjoy a reasonable living from few commissions," and is very proud of being the town's "arch-e-tet." Well he might be; his work, which, without his presence in the community would largely have been done without benefit of an architect, is first rate. Enthusiastic, like others who feel satisfaction in a general practice in a smaller community (I remember so well the missionary attitude of the late Sheldon Brumbaugh of Klamath Falls, Oregon, who started us on our "Architect and His Community" series), he believes that dispersion of the profession would benefit the public as well as the architects. He believes sincerely that "other beginning architects might find an outlet for energies and talents in small communities." After working with **Richard Colley** in Corpus Christi, and a "short stint" in Dallas offices, he prefers the hard work ("by day I talk to clients, salesmen, check shop drawings, supervise the work . . . at night I do my drawing") and the satisfaction ("after three and one-half years I feel that my practice is well grounded, with lots of room for improvement") of his present location.

Lots of individual architectural travel to Europe this year, in addition to the guided and sponsored tours. **Morris Ketchum,** for instance, made a store-design consultation job an excuse for visiting current Scandinavian work. It all makes me restless again. Incidentally, I was sad to read that the sculptor, Laurens, whom we met on our last trip abroad, had died. He and his wife were with us on our visit to the St. Lo Hospital of **Paul Nelson,** along with a charming Italian designer named **Madeleine,** now Madame Nelson and the mother of a bouncing boy. I wonder what language(s) he will grow up to speak—English, French, *and* Italian probably. It was in a combination of those tongues that we all spent an evening playing poker in Varangeville.

Now that I'm on the subject of sculptors—and women—I should report that I have just seen the **Gwen Lux** piece for a school by **Kelly & Gruzen**—one of the strongest things she's done, boldly conceived, beautifully detailed. Which reminds me that **Mitzi Solomon** (Cunliffe) writes that she's coming back to the States for a visit this fall, after a period of considerable accomplishment producing sculpture for contemporary English architecture.

As soon as the last **Saarinen** chair for the lobby arrives from **Knoll Associates** we will photograph the new Reinhold and P/A offices and show them to you. We're really enjoying the space laid out for us so ably by **Lou Shulman,** in this building remodeled almost from scratch by **Emery Roth & Sons,** who seem, at this writing to be redesigning most of mid-Manhattan. That's not entirely true, though—**Harrison & Abramovitz** have one office building going up now, and another in design stage, which the client announces will be "institutional" rather than "commercial" in character. A nice trick. **Bill Lescaze** has one to go over on Lexington Avenue, and an "artist's conception" of a **Pereira & Luckman** design for a spot a few blocks below us has been circulating. Perhaps, ultimately, some pattern of harmony will appear, but at the moment the consistent scale which did exist on Park Avenue's façades is being lost to scattered, completely various design efforts.

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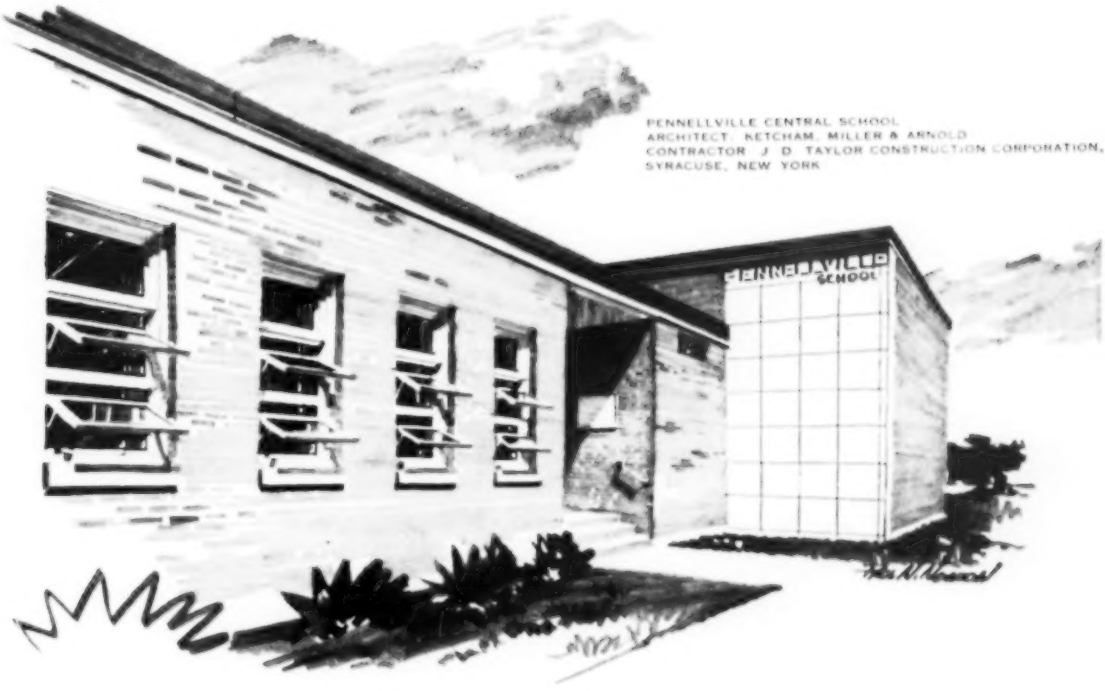

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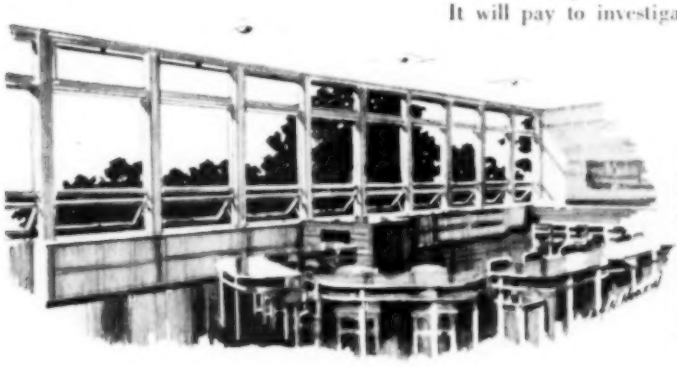

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